UNDERGRADUATE CALENDAR OF THE UNIVERSITY OF NEW BRUNSWICK CANADA

2022-2023

Established 1785 as the Provincial
Academy of Arts and Sciences

Fredericton Campus	Saint John Campus
College Hill, PO Box 4400	Tucker Park, PO Box 5050
Fredericton, N.B. E3B 5A3	Saint John, N.B E2L 4L5
Telephone (506) 453-4666	Telephone (506) 648-5500

The Calendar is available in electronic form on the UNB website:
www.unb.ca/academics/calendar/undergraduate/current/index.html

Important Notices

This Calendar is printed some months before the year for which it is intended to provide guidance, and students are advised that matters dealt with in it are under continuing review and revision. The content of this Calendar is subject to change without notice, and every student accepted for registration in the University shall be deemed to have agreed to any such deletion, revision or addition whether made before or after said acceptance.

The University will make every reasonable effort to offer courses as required within programs. Prospective students should note that admission to a degree or other program does not guarantee admission to any given course except those specified as required within that program. Students should select elective courses so as to ensure that courses are taken at the most appropriate time within their schedule.

The University of New Brunswick does not accept any responsibility for loss or damage suffered or incurred by any student as a result of suspension or termination of services, courses or classes caused by reason of strikes, lockouts, riots, weather, damage to university property or for any other cause beyond the reasonable control of the University of New Brunswick.

The University of New Brunswick Undergraduate Calendar is available in

electronic form on our website:
www.unb.ca/academics/calendar/undergraduate/current/index.html

Inquiries regarding academic matters should be directed to the Office of the Registrar

Fredericton Campus
2nd Floor, Sir Howard Douglas Hall
University of New Brunswick
Fredericton, New Brunswick, E3B 5A3
Telephone: (506) 453-4864 Fax: (506) 453-5016
E-mail: registrar@unb.ca

Saint John Campus
Room 141, Philip W. Oland Hall
University of New Brunswick
Saint John, New Brunswick, E2L 4L5
Telephone: (506) 648-5670 Fax: (506) 648-5691
E-mail: unbsjreg@unb.ca

TABLE OF CONTENTS

Section Contents

NOTE: The dates shown below apply to Undergraduate programs. They do not necessarily apply to the School of Graduate Studies, the Faculty of Law, Nursing ASP, or to Open Entry courses offered through the College of Extended Learning. Students in other programs should consult the appropriate Calendar or brochure.
Dates listed for each session include the exam dates.
Summer Term Session Dates:

- Full Summer Term: May 10 - August 15 (14 week session)
- Session A: May 10 - June 27 (8 week session)
- Session B: May 10 - June 01 (4 week session
- Session C: June 06 - June 27 (4 week session)
- Session D: July 07 - August 15 (6 week session)
- Session E: July 07 - July 25 (3 week session)
- Session F: July 27 - August 15 (3 week session)

Tuition and related fees are to be set by Financial Services, please refer to their website at *www.unb.ca/financialservices/students/index.html*
Refund Policy for the Summer Term – May to Aug courses sessions A through F are based on prorated fees from the first day of class up to the sixth class. No refund will be issued after the sixth class.

SUMMER TERM 2022 – Deadline Dates

	Full Session May 10 - Aug 15	Session A May 10 - June 27	Session B May 10 - June 1	Session C June 6 - June 27	Session D July 7- Aug 15	Session E July 7- July 25	Session F July 27 - Aug 15
Last day to Add or Drop a course. Courses dropped up to and including this day are not shown on the academic record.	May 25 *See note below	May 16	May 12	June 8	July 12	July 8	July 28
Last day to Drop a course without academic penalty. A grade of "W" withdrawn will be shown on your academic record.	July 14	June 9	May 25	June 20	August 2	July 19	August 9
Exam Dates	August 17	June 29, 30, July 4	June 3-4	June 29-30	August 17-18	July 27	August 17
Deadline for Course Payment	The first day of classes is the deadline for summer term course fees to be paid in full.						
Prorated Refund Deadline	May-Aug course (Session A-F) are based on prorated fees from the first day of class up to the sixth class. No refund will be issued after the sixth class.						

NOTES: Dates listed for each session do not include the exam dates. Courses listed on the timetable without a session letter (FRE1) are Full Session. This may vary depending on the individual course start & end dates.
***NOTE**: Students may add/drop a Full Session course up to the second Friday following the course start date. Full Session start dates vary depending on the individual course start and end dates.

SUMMER TERM (Fredericton)

MONTH	DAY	DATE	EVENT
MAY 2022	Tuesday	10	• UNB Summer Term begins. • Full Term Summer courses begin (May 10 - August 15). Session A (May 10 - June 27) classes begin. Session B (May 10 - June 01) classes begin. • Tuition fees are due.
	Thursday	12	• Last day for adding or dropping **Session B** courses. Session B courses dropped up to and including this date not shown on academic record.
	Monday	16	• Last day for adding and dropping **Session A** courses. Session A courses dropped up to and including this date not shown on academic record.
	Monday	23	• Victoria Day - University Holiday - no classes*
	Wednesday	25	• Last day for adding **Full Session (FR01)** courses. Full Session courses dropped up to and including this date not shown on academic record. After this date a notation of "W" (withdrawn no academic penalty) will be shown on the academic transcript. *Note: students may drop a Full Session course up to the second Friday following the course start date. Full session start dates vary depending on the individual course start and end dates.
	Wednesday	25	• Last day to withdraw from **Session B** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.

	Wednesday, Thursday	25-26	• Encaenia, UNB Fredericton
	Friday	27	• Last day for in class tests, **Session B.**
	Thursday	27	• Last day of **Session B.**
	Friday	28	• Reading day **Session B.**
	Saturday, Monday	29&31	• Final Examinations for **Session B.**
JUNE 2022	Wednesday	01	• Last day of **Session B.**
	Thursday	02	• Reading day **Session B.**
	Friday, Saturday	03-04	• Final examinations **Session B.**
	Monday	06	• Session C classes begin (June 06 - June 27). Tuition Fees are due.
	Wednesday	08	• Last day for adding and dropping **Session C** courses. Session C courses dropped up to and including this date not shown on the academic record.
	Thursday	09	• Last day to withdraw from **Session A** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply
	Friday	17	• Last day for in class tests, **Session A.**
	Monday	20	• Last day to withdraw from **Session C** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Wednesday	22	• Last day for in class tests, **Session C.**
	Tuesday	28	• Reading day for **Session A and Session C.**
	Wednesday, Thursday, Monday	29, 30, July 04	• Final examinations **Session A.**
	Wednesday, Thursday	29-30	• Final examinations for **Session C.**
JULY 2022	Friday	01	• Canada Day - University Holiday - no classes*
	Thursday	07	• **Session D** classes begin (July 07 - August 15). • **Session E** classes begin (July 07 - July 25). • Tuition fees are due.
	Friday	08	• Last day for adding and dropping **Session E** courses. Session E courses dropped up to and including this date not shown on academic record.
	Tuesday	12	• Last day for adding and dropping **Session D** courses. Session D courses dropped up to and including this date not shown on academic record.
	Tuesday	19	• Last day to withdraw from Session E courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Thursday	21	• Last day for in class tests, **Session E**.
	Monday	25	• Last day of classes for **Session E.**
	Tuesday	26	• Reading Day for **Session E.**
	Wednesday	27	• Final examinations for **Session E**
	Wednesday	27	• **Session F** classes begin (July 27 - August 15). Tuition fees are du.
	Thursday	28	• Last day for adding and dropping **Session F** courses. Session F courses dropped up to and including this date not shown on academic record.
	Friday	29	• Last day for in class tests, **Full Session (FRE1).**
AUGUST 2022	Monday	01	• New Brunswick Day - University Holiday - no classes*
	Tuesday	02	• Last day to withdraw from **Session D** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Monday	08	• Last day for in class tests, **Session D.**
	Tuesday	09	• Last day to withdraw from **Session F** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Thursday	11	• Last day for in class tests, **Session D.**
	Monday	15	• Last day of classes for **Session D**. • Last day of classes for **Session F**.
	Tuesday	16	• Reading Day for **Session D**. • Reading Day for **Session F**.
	Wednesday	17	• Final examinations for **Session F**. • Final examinations for **Full Session (FRE1)** courses.
	Wednesday, Thursday	17-18	• Final examinations for **Session D**.

Except for essential services , most university offices will be closed on the dates indicated as "University Holiday". Essential functions, for example, UNB Security & Traffic. Facilities Management and the Residences will be staffed and operational. Emergency maintenance may be arranged through the Security Department. A few departments and facilities such as the libraries and computer labs may offer some services on certain holidays. Those wishing to use such services on a holiday are advised to check with the specific department about operations for that day.

SUMMER TERM (Saint John)
Summer Term Session Dates:
- Full Summer Term - Session M: May 10 - August 31
- Session G: May 10 - August 4
- Session H: May 10 - July 5
- Session J: May 10 - May 31
- Session K: July 11 - August 4

Tuition and related fees are to set by Finanical Services, please refer to their website at *www.unb.ca/financialservices/students/index.html*

Refund policy for the Summer Term - May to Aug courses sessions A through K are based on prorated fees from the first day of class up to the sixth class. No refund will be issued after the sixth class.

Summer Term 2022 – Deadline Dates

	Full Term Session M May 10- Aug 31	Session G May 10-Aug 4	Session H May 10-July 5	Session J May 10-May 31	Session K July 11- Aug 4
Last day to Add or Drop a course. Courses dropped up to and including this day are not shown on academic record.	May 25	May 24	May 20	May 12	July 14
Last day to Drop a course without academic penalty. A grade of "W" withdrawn will be shown on your academic record.	August 02	July 08	June 17	May 24	July 26
Exam Dates		Aug 06-09	July 07-09		Aug 06-09
Deadline for Course Payment	The first day of classes is the deadline for summer term course fees to be paid in full.				
Prorated Refund Deadline	May-Aug course (Session A-F) are based on prorated fees from the first day of class up to the sixth classes. No refund will be issued after the sixth class.				

NOTES: Dates listed for each session do not include the exam dates. Courses listed on the timetable without a session letter (FR01) are Full Session. This may vary depending on the individual course start & end dates.

*NOTE: The Add/Drop dates for Full Session Course follow the term regulation which states the students may drop a term course up to the second Friday following the start date.

MONTH	DAY	DATE	EVENT
MAY 2022	Tuesday	10	• UNB Summer Term begins. • Classes begin **Session J** (May 10 - 31). **Session G** (May 10 - August 4). **Session H** (May 10 - July 5). **Session M** (May 10 - August 31). • Tuition fees are due.
	Thursday	12	• Last day for adding **Session J** courses. Session J courses dropped up to and including this date not shown on academic record.
	Friday	20	• Last day for adding **Session H** courses. Session H courses dropped up to and including this date not shown on academic record.
	Monday	23	• Victoria Day - University Holiday - no classes*
	Tuesday	24	• Last day for adding **Session G** courses. Session G courses dropped up to and including this date not shown on academic record. • Last day to withdraw from **Session J** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic transcript. After this date a grade of "WF" (withdrawn fail) will apply.
	Wednesday	25	• Last day for in class tests, **Session J** • Last day for adding **Session M** courses. Session M courses dropped up to and including this date not shown on academic record.
	Friday	27	• Spring Convocation Day - UNB Saint John
	Tuesday	31	• Last day of classes for **Session J**
JUNE 2022	Friday	17	• Last day to withdraw from **Session H** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic transcript. After this date a grade of "WF" (withdrawn fail) will apply.
	Tuesday	21	• Last day for in class tests, for **Session H**
JULY 2022	Friday	01	• Canada Day - University Holiday - no classes*
	Tuesday	05	• Last day of classes, **Session H**
	Wednesday	06	• Reading day for **Session H and G.**
	Thursday-Saturday	07-09	• Exams, **Session H**
	Friday	08	• Last day to withdraw from **Session G** courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic transcript. After this date a grade of "WF" (withdrawn fail) will apply.
	Monday	11	• **Session K** classes begin (July 11 - July 04). • Tuition Fees are due.
	Thursday	14	• Last day for adding or dropping **Session K** courses. Session K courses dropped up to and including this date not shown on academic transcript.
	Wednesday	20	• Last day for in class tests, **Session G**
	Tuesday	26	• Last day to withdraw from **Session K** courses without academic penalty. A grade of "W" withdrawn will be shown on the academic transcripts. After this date, a grade of "WF" (withdrawn fail) will apply.
	Thursday	28	• Last day for in class tests, **Session K.**
AUGUST 2022	Monday	01	• New Brunswick Day - University Holiday - no classes*
	Tuesday	02	• Last day to withdraw from **Session M** courses without academic penalty. A grade of "W" withdrawn will be shown on the academic transcripts. After this date, a grade of "WF" (withdrawn fail) will apply.
	Thursday	04	• Last day of classes for **Session G, Session K.**
	Friday	05	• Reading Day, **Session G, K**
	Saturday-Tuesday	06-09	• Exams for **Session G, Session K**
	Wednesday	31	• Last day of **Session M**

*Except for essential services, most university offices will be closed on the dates indicated as "University Holiday". Essential functions, for example, UNB Security & Traffic, Facilties Management and the Residences will be staffed and operational. Emergency maintenance may be arranged through the Security Department. A few departments and facilities such as the libraries and computer labs may offer some services on certain holidays. Those wishing to use such services on a holiday are advised to check with the specific department about operations for that day.

FALL TERM 2022

NOTE: The dates shown below apply to Undergraduate programs. They do not necessarily apply to the School of Graduate Studies , the Faculty of Law, Nursing ASP, or to Open Entry courses offered through the College of Extended Learning. Students in other programs should consult the appropriate Calendar or brochure. Dates listed for each session include the exam dates.

Classes Start Wednesday, September 07, 2022	End Thursday, December 08, 2022	60 Teaching Days

UNB CALENDAR OF ACADEMIC DATES, 2022-2023

MONTH	DAY	DATE	EVENT
SEPTEMBER 2022	Monday	05	• Labour Day - University Holiday - no classes*
	Wednesday	07	• Start of classes for both Campuses (not including Law and the 11-month BEd) Students are expected to arrive on campus by the first day of classes.
	Friday	16	• Last day for payment of University tuition and fees
	Friday	16	Last day for adding **Fall Term** and **full-year courses.** Fall term and full-year academic courses dropped up to and including this date not shown on academic transcript. After this date a notation of "W" (withdrawn no academic penalty) will be shown on the academic transcript. • Students may drop and add courses up to the last day to add for the term without being charged a pro-rated fee. Courses dropped after the last day to add classes will be subject to pro-rated tuition fees from the first week of classes up to the withdrawal date shown on the student academic record.
	Friday	23	• Last day to opt-out of Student Union Health and Dental Plan. • Last day to be granted an exemption from the International Health Insurance Plan.
	Friday	30	• National Day for Truth and Reconciliation - no classes*
OCTOBER 2022	Monday	10	• Thanksgiving Day - University Holiday - no classes*
	Thursday	13	• Fall Convocation - UNB Fredericton
	Friday	14	• Fall Convocation - UNB Saint John
	Friday	21	• Last day to withdraw from **Fall Term** courses with prorated refund.
NOVEMBER 2022	Tuesday	01	• Last day to withdraw from from **Fall Term courses** without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Monday - Friday	07-11	• Fall Term Reading Week - no classes or tests/assignments scheduled.
	Friday	11	• Remembrance Day - University closed - no classes*
	Thursday	24	• Last day in Fall Term to hold class tests (no class tests to be held during the last 10 teaching days of the term).
DECEMBER 2022	Thursday	08	• Last day of Fall Term classes (60 Teaching Days)
	Friday	09	• Reading Day - no classes or tests/assignments scheduled
	Saturday	10	• Final examinations begins
	Tuesday	20	• Final examinations end (9 days)
	Wednesday	21	• Residence closes for holiday break.

Nursing students may need to participate in nursing clinicals and practicums during the Reading Weeks.

Students living in residence should contact their campus residence office for specific move-in dates.

*Except for essential services, most university offices will be closed on the dates indicated as "University Holiday". Essential functions, for example, UNB Security & Traffic, Facilities Management and the Residences will be staffed and operational. Emergency maintenance may be arranged through the Security Department. A few departments and facilities such as the libraries and computer labs may offer some services on certain holidays. Those wishing to use such services on a holiday are advised to check with the specific department about operations for that day.

WINTER TERM 2023

Classes start Monday, January 09, 2023 | End Thursday, April 13, 2023 | 61 Teaching days			
MONTH	DAY	DATE	EVENT
	Monday	09	• Start of classes for both campuses. Students are expected to arrive on campus by the first day of classes.
	Friday	20	• Last day for payment of Winter term fees for new students. Last day for payment of University fees for full-time students paying by installments.
	Friday	20	• Last day for adding **Winter Term courses.** Winter Term courses dropped up to and including this date not shown on academic transcript. After this date a notation of "W" (withdrawn no academic penalty) will be shown on the academic transcript. • Last day to withdraw from **full-year courses** without academic penalty. A notation "W" (withdrawn) will be shown on the academic transcript. After this date a notation of "WF" (withdrawn fail) will apply. • Students may drop and add courses up to the last day to add for the term without being charged a pro-rated fee. Courses dropped after the last day to add classes will be subject to pro-rated tuition fees feom the first week of classes up to withdrawal date shown on the student academic record.
	Friday	27	• Last day to opt-out of Student Union Health and Dental Plan for those students who entered in January, 2023. • Last day to be granted an exemption from the International Health Insurance Plan for those students who entered in January, 2023.
FEBRUARY 2023	Monday	20	• NB Family Day - University Holiday - no classes*
	Friday	24	• Last day to withdraw from Winter Term courses with prorated refund
MARCH 2023	Monday-Friday	06-10	• Winter term Reading Week - no classes or tests/assignments scheduled.
	Monday	13	• Last day to withdraw from Winter term courses without academic penalty. A grade of "W" (withdrawn) will be shown on the academic record. After this date a grade of "WF" (withdrawn fail) will apply.
	Wednesday	29	• Last day in Winter term to hold class tests (no class tests to be held during the last 10 teaching days of the term)
APRIL 2023	Friday - Monday	07-10	• Easter - University Holidays - no classes*
	Thursday	13	• Last day of Winter Term classes (62 teaching days)
	Friday	14	• Reading Day - no classes or tests/assignments scheduled
	Saturday	15	• Final examinations begin
	Tuesday	25	• Final examinations end (9 days)
	Wednesday	26	• Residences close

Nursing students may need to participate in nursing clinicals and practicums during the winter break.

Students living in residence should contact their campus residence office for specific move-in dates.

* Except for essential services, most university offices will be closed on the dates indicated as "University Holiday". Essential functions, for example, UNB Security & Traffic, Facilities Management and the Residences will be staffed and operational. Emergency maintenance may be arranged through the Security Department. A few departments and facilities such as the libraries and computer labs may offer some services on certain holidays. Those wishing to use such services on a holiday are advised to check with the specific department about operations for that day.

PEOPLE AT UNB

Section Content

THE UNIVERSITY OF NEW BRUNSWICK BOARD OF GOVERNORS, 2021-2022

EX-OFFICIO MEMBERS
Chancellor
Allison D. McCain
President and Vice-Chancellor
Paul Mazerolle
Vice President (Research)
David I. MaGee
Vice-President Academic (Fredericton)
Kathy Wilson
Vice-President (Administration and Finance)
Karen Cunningham
Vice-President (Saint John)
Petra Hauf
Mayor of Fredericton
Her Worship, Kate Rogers
Mayor of Saint John
Her Worship, Donna Reardon
Executive Director Associated Alumni
Michelle McNeil
University Secretary (Secretary of the Board)
Sarah J. DeVarenne
MEMBERS APPOINTED BY THE LIEUTENANT-GOVERNOR IN COUNCIL

- CARSON, Wayne
- CONNORS-LOSIER, Rhonda
- HOYT, Kevin
- KNOX, Janet
- MacDONALD, Christopher
- MacLAUCHLAN, Julia
- PERLEY, David
- TINGLEY, Robyn (Chair)
- VIBERT, Neil
- WOOLNOUGH, David

APPOINTED BY ASSOCIATED ALUMNI(ae)

- DELONG, Brooke
- JOLLINEAU, Jill
- SUTHERLAND-GREEN, Jennifer
- SYROID, Peter

- WARD, Jennifer

APPOINTED BY THE BOARD OF GOVERNORS

- GRIBBONS, Tom
- HACHEY, Larry
- HOYT, Janet
- PROSSER, Catherine
- TBA

ELECTED BY FACULTY MEMBERS, FREDERICTON

- TBA
- HUSAIN, Viqar
- PASSARIS, Constantine
- SCOTT-STOREY, Kelly

ELECTED BY FACULTY MEMBERS, SAINT JOHN

- CHOPIN, Thierry
- LIGHT-THOMPSON, Janet

APPOINTED BY THE NEW BRUNSWICK TEACHERS' ASSOCIATION

- CUMING, Rick

ELECTED BY STUDENTS, FREDERICTON

- VARDHAN, Vishnu
- WALSH, Kordell

ELECTED BY STUDENTS, SAINT JOHN

- HICKEY, Patrick

GOVERNORS EMERITI

- FAIRWEATHER, Roxanne
- GANONG, David
- McCAIN, Kathryn
- O'BRIEN, David
- STEVENSON, David

CHANCELLOR EMERITUS

- CURRIE, Richard J.

FREDERICTON SENATE 2021-2022

EX-OFFICIO MEMBERS
The President: Paul Mazerolle
Vice President Academic (Fredericton): Kathy Wilson
Vice President (Administration and Finance): Karen Cunningham
Vice President (Research): David MaGee
Vice President (Saint John): Petra Hauf
President, St. Thomas University: Dawn Russell
Dean of Arts: Joanne Wright
Dean of Computer Science: Luigi Benedicenti
Dean of Education: Sharon Wahl
Dean of Engineering: Chris Diduch
Acting Dean of Forestry & Environmental Management:
Michelle Gray
Acting Dean of Graduate Studies: Kevin Englehart
Dean of Kinesiology: Wayne Albert
Dean of Law: Michael Marin
Dean of Management: Devashis Mitra
Dean of Nursing: Lorna Butler
Dean of Renaissance College: Carol Nemeroff
Dean of Science: Gary Saunders
Assistant Vice-President (Student Services): Mark Walma
Exec. Director of Associated Alumni: Michelle McNeil
Exec. Director of the College of Extended Learning:
Ian Allen
Dean of Libraries (Fredericton): Lesley Balcom
Registrar (Fredericton): Shawna Bergin
Acting Assoc. VP Academic (Learning Environment): Van Lantz
Piluwitahasuwin (AVP Indigenous Engagement): TBA
Nikanahtpat (Director, MWC): Natasha Simon
Secretary of the Senate: Sarah DeVarenne
FACULTY REPRESENTATIVES, ELECTED BY FACULTIES
Faculty of Arts

- BLAIR, Susan
- BROWN, Jeffrey
- DALKIR, Elif
- HORNE, Christine
- SEARS, Matthew

Faculty of Management

- GAJUREL, Dinesh
- SHARMA, Basu

Faculty of Computer Science

- LASHKARI, Arash Habibi

Faculty of Education

- ROWETT, Jenny
- KRISTMANSON, Paula

Faculty of Engineering

- CHURCH, Ian
- HANSON, Trevor
- ROMERO-ZERON, Laura

Faculty of Forestry and Environmental Management

- TBA

Faculty of Kinesiology

- BOUCHARD, Danielle

Faculty of Law

- FROC, Kerri

Faculty of Nursing

- DOIRON-MAILLET, Nancy

Renaissance College

- MENGEL, Thomas

Faculty of Science

- BENTON, J. Bruce
- BROSTER, Bruce
- ĆAĆIĆ, Branimir
- MALENFANT, Rene

Alumni Representative

- MARTEL, Andrew

Library Representative

- HANRATTY, Siobhan

THE ELECTED FACULTY MEMBERS OF THE BOARD (FREDERICTON)

- HUSAIN, Viqar
- PASSARIS, Constantine
- SCOTT-STOREY, Kelly
- TBA

TWO MEMBERS APPOINTMENT BY THE BOARD FROM THE MEMBERS OF THE BOARD EXCLUSIVE OF THE ELECTED FACULTY MEMBERS OF THE BOARD

- SUTHERLAND-GREEN, Jennifer
- WARD, Jennifer

SIX FACULTY MEMBERS ELECTED AT-LARGE

- AMIRAULT, Debbi
- EVANS, Patricia
- LENTZ, David
- LOWRY, Brian
- MANCKE, Elizabeth
- O'BYRNE, Nicole

TWO MEMBERS ELECTED BY AND FROM AMONG THE PART-TIME INSTRUCTORS AND LIBRARIANS

- MCGRATH, Sally
- TBA

SIX STUDENT REPRESENTATIVES ELECTED AT-LARGE

- BOUVIER, Luc
- MACKENZIE, Sean
- MAKAROV, Josh
- NOSEWORTHY, Gaia
- RAI, Bhaanvi
- SHARMA, Ridhi

PART- TIME STUDENT REPRESENTATIVE

- TBA

GRADUATE STUDENT REPRENSTATIVE

- GULATI, Winner

SAINT JOHN SENATE 2020-2021

EX-OFFICIO MEMBERS
The President (Chair of Senate):
Paul Mazerolle
Vice President (Saint John) (Vice-Chair of Senate):
Petra Hauf
Vice President Academic (Fredericton)):
Kathy Wilson
Vice President (Administration and Finance):
Karen Cunningham
Vice President (Research):
David MaGee
Associate Vice President (Saint John):
Laurelle LeVert
Acting Dean of Graduate Studies:
Kevin Englehart
Dean of Arts:
Heidi MacDonald
Dean Faculty of Business:
Michel Rod
Dean Faculty of Science, Applied Science & Engineering):
Michael Van Zyll de Jong
Dean of Libraries:
Lesley Balcom
Registrar (Saint John):
Wahkuna Lisik
Director Student Services:
Sheldon MacLeod
Secretary:
Elizabeth Flemming
FACULTY REPRESENTATIVES, ELECTED BY FACULTIES
Faculty of Arts:

- DOWNES, Dann
- JONES, Miriam

Faculty of Business:

- DOIRON, Dan
- FLEET, Greg

Faculty of Science, Applied, Science & Engineering:

- HOULAHAN, Jeff
- WAYCOTT, Loretta

ALUMNI REPRESENTATIVE

- MUNROE, Nathan

ELECTED FACULTY MEMBERS OF THE BOARD

- CHOPIN, Thierry
- LIGHT THOMPSON, Janet

ONE MEMBER APPOINTED BY AND FROM MEMBERS OF THE BOARD EXCLUSIVE OF ELECTED FACULTY MEMBERS

- JOLLINEAU, Jill

NINE FACULTY MEMBERS ELECTED-AT-LARGE

- ALDERSON, Tim (SASE)
- BACKMAN, Phil (SASE)
- BELL, Sandra (Arts)
- BEST, LISA (SASE)
- IBN-BOAMAH, Mustapha (Business)
- LEWIS, JP (Arts)
- MCKAY, Rebecca (SASE)
- WATSON, Barry (Business)
- WILBIKS, Jonathan (SASE)

ONE FULL-TIME LIBRARIAN, ELECTED BY AND FROM THE FULL-TIME LIBRARIANS

- ROSS, David

ONE MEMBER ELECTED BY AND FROM THE CONTRACT ACADEMIC INSTRUCTORS AND CONTRACT ACADEMIC LIBRARIANS (NON-VOTING PENDING AMENDMENT TO THE UNB ACT)

- CASSIDY, Monique

THREE STUDENT REPRESENTATIVES ELECTED-AT-LARGE

- HICKEY, Patrick
- TBD
- TBD

OFFICERS OF THE UNIVERSITY

President and Vice-Chancellor:
Paul Mazerolle, BA, MA, PhD

Vice-President (Research):
David MaGee, BSc, PhD

Vice-President (Administration and Finance):
Karen Cunningham, CA, BComm

Vice-President Academic (Fredericton):
Kathy Wilson, BN, MN, PhD

Vice-President (Saint John):
Petra Hauf

Acting Associate Vice-President Academic (Learning Environment):
Van Lantz, BA, MA, PhD

Associate Vice-President (Capital Planning and Operations):
Mary Jane Adams B.Rec, B.E.D.S, M. of Arch

Associate Vice-President (Human Resources and Organizational Development):
Petra Bergner, MA, CEC, CPHR

Associate Vice-President (Information Technology Services):
Terry Nikkel, BA, MLIS, MBA

Acting Dean, Graduate Studies:
Kevin Englehart, PhD

Associate Vice-President (Saint John):
Laurelle LeVert, BA, MA, MA, PhD

Associate Vice-President Academic (Partnerships):
John Kershaw, BSF, MSF, PhD

Assistant Vice-President (Recruitment & Strategic Enrollment Mgmt):
Lloyd Henderson

Acting Vice-President (Advancement):
Susan Montague, BA, MEd

Executive Director, Associate Alumni:
Michelle McNeil, BBA, MBA

Executive Director, Office of Research Services:
Kelly Ashfield, DScEng, MBA, PEng

Executive Director, College of Extended Learning:
Ian Allen, BBA, BA, Bed, MEd

Director of Government Relations:
David Emerson, BAA, EcD

Assistant Vice-President (Student Services):
Mark Walma, BA, MA, LLB

Director Student Services, (UNBSJ):
Sheldon MacLeod

Director, Student Recruitment
Dax MacLean, BScKin, MEd

Dean of Libraries:
Lesley Balcom, BA, MLIS

Registrar (UNBF):
Shawna Bergin, BBA

Registrar (UNBSJ):
Wahkuna Lisik

University Secretary:
Sarah DeVarenne, BSc

University Treasurer:
Jennifer Morrison, CPA, CA

University Comptroller:
Alexandra E.M. Ferris

Assistant Comptroller:
Cindy Flann, BBA, CGA

DEANS OF FACULTIES

Fredericton

Faculty of Arts:
Joanne Wright, BSc, MA, PhD

Faculty of Management:
Devashis Mitra, BA, PhD, CA, FCA

Faculty of Science:
Gary Saunders, BSc, MSc, PhD

Faculty of Computer Science:
Luigi Benedicenti, BEng, MACS, PhD

Faculty of Education:
Sharon Wahl, BA, MEd, PhD

Faculty of Engineering:
Chris Diduch, BScE, MScE, PhD

School of Graduate Studies (Assoc. Dean (UNBF)):
Patricia Evans (Acting) – Science, Computer Science, Forestry, Engineering
Sasha Mullaly – Arts, Kinesiology, Nursing, Education, Management

School of Graduate Studies (Assoc. Dean (UNBSJ)):
James Kieffer, BSc, MSc, PhD

Faculty of Forestry and Environmental Management:
Michelle Gray, BSc ,MSc, PhD (Acting)

Faculty of Kinesiology:
Wayne Albert, BSc, MA, PhD

Faculty of Law:
Michael Marin, MA, LLM

Faculty of Nursing:
Lorna Butler, BScN, MScN, PhD

Renaissance College:
Carol Nemeroff, BA, MA, PhD

Saint John

Faculty of Arts:
Heidi MacDonald, BA, MA, PhD

Faculty of Business:
Michel Rod, BSc (Hon, UWO), MSC (Calgary), PhD (Birmingham, UK)

Faculty of Science, Applied Science & Engineering:
Michael Van Zyll de Jong, BSc, MSc, PhD

EMERITUS HONOUREES

President Emeritus:
John McLaughlin, BScE, MScE, PhD, PEng
Vice-President (Academic) Emeritus:
Robert E. Burridge, BScE, MS, PhD, PEng
Vice President (Finance and Administration) Emeritus:
James O'Sullivan, BBA, LLD
Vice-President (Research and International Cooperation) Emeritus:
Frank Wilson, BScE, MScE, PhD, FCAE, FCSCE, FEIC, Peng
NOTE: Only living Emeritus Honorees are listed.
Professors and Dean Emeriti:

- Christina, John A., BEng, PhD, FICE, FCSCE, FEIC, PEng, CEng
- Davis, Gwendolyn, BA, CertEd, MA, PhD
- Ericson, Penelope, BScN, MScN
- Faig, Wolfgang, Dipl Ing, MScE, Dring, PEng
- Kent, Peter C., BA, MA, PhD
- Nair, K.P.K., BE, MTech, PhD
- Small, Marian, BA, MA, EdD
- Stevenson, Christopher, BSc, MA, MPE, PhD
- Unger, Israel, BSc, MSc, PhD

Professors Emeriti:

- Acheson, T. William, BA, MA, PhD - History
- Allardyce, Gilbert D., BA, MA, PhD - History
- Askanas, Wiktor, BA, MBA, PhD - Administration
- Austin, Diana, BA, MA, DPhil - English
- Bhavsar, Virendrakumar C., BSc, MSc, PhD - Computer Science
- Bonham, David - BSc, MEng, PhD, PEng - Mechanical Engineering
- Bottomley, Frank, BSc, MSc, PhD, DSc, FCIC - Chemistry
- Bray, Dale I., BScE, MScE, PhD - Civil Engineering
- Buckner, Phillip, BA, PhD - History
- Cameron, Ann C., BA, MA, PhD - Psychology
- Campbell, Gail, BA, MA, PhD - History
- Carusetta, Ellen
- Clark, David, BSc, MA, MPhil, PhD - Psychology
- Cockburn, Robert Hood, BA, MA - English
- Coleman, David, BScE, MScE, PhD - Geodesy & Geomatics Engineering
- Cooper, Rodney, BCS, MSc - Computer Science
- Croll James C., BA, Bed, MPs, MA, EdD - Education
- Davies, Huw, BSc, PhD, PEng - Mechanical Engineering
- Doraiswami, Rajamani, BEE, MEE, PhD - Electrical & Computer Engineering
- Edwards, Viviane, M, BA, BEd, MEd - Education
- Eppert, Franz, Wissenchaftliche Profung fur das Lehramt an Hoheren Scholen, Zweite Philologische Staatsprufung, DPhil - Culture and Language Studies
- Frank, David, BA, MA, PhD - History
- Fritz, Jane, BSc, MSc, DPhil - Computer Science
- Gendreau, Paul E., BA, MA, PhD - Psychology - Saint John
- Gibbs, Robert J., Ba, MA, PhD- English
- Gibson, Cheryl, BN, MScN, PhD - Nursing
- Grein, Friedrich, BSc, MSc, PhD, FCIC - Chemistry
- Guetty, Grace, BN, MN, PhD - Nursing
- Gupta, Rameshwar, BSc, MSc, MA, PhD - Statistics
- Hamilton, Angus C., BASc, MASc - Surveying Engineering
- Hawkes, Robert E., BA, BEd, MA - Education
- Hussain, Esam, MA, BSc, MSc, PhD, PEng
- Jollineau, R. Wayne, CS, BSc, MBA, CMA - Business, Saint John
- Kealey, Gregory
- Kealey, Linda
- Krause, Margarida, Licenciature, MSc, PhD - Biology
- Leavitt, Robert - Education
- Lees, Ronald, BSc, MSc, PhD - Physics
- Linton, Colan, BSc, PhD, DIC - Physics
- Lister, Derek - Chemical Engineering
- London, J. Dalton G., BA, MA, D d'U - Education
- Lorey, Christopher, BA, MA, PhD - German
- MacIntosh, Judith, BN, MN, PhD - Nursing

- MacIver, Donald A., BEd, MEd, PhD - Educational Foundations
- MacKreacher, Dorothy, BSc, MEd, PhD - Education
- MacLean, David A., BSc, MSc, PhD - Forestry & Environmental Management
- Maher, Robert, BA, MBA, PhD, CA - Business Administration
- Mason, Gordon, R. BSc, MSc, PhD - Mathematics & Statistics
- Matta, Saba
- McDonnell, Paul M., BA, MA, PhD - Psychology
- Monson, Barry, BSc, MSc, PhD - Mathematics & Statistics
- Morris, David, BSc, PhD - Chemical Engineering
- Murray, James S., BA, MA, PhD - Classics & Ancient History
- Nason-Clark, Nancy, BA, MA, PhD - Sociology
- Neilson, Linda, BA, MA, PhD - Sociology
- Nicki, Richard M., BA, MA, PhD - Psychology
- Parker, Phillip, BScEng, MSc, PhD, PEng - Electrical and Computer Engineering
- Passmore, Jack - BSc, Dipl Ed, PhD, DSC, FCIC - Chemistry
- Patterson, Stephen E., BA, MA, PhD - History
- Powell, Graham, BSc, MSc, PhD - Forestry & Environmental Management
- Poyatos Fernando, BA, MA, PhD - Spanish
- Rehorick, David, BA, MA, PhD - Sociology
- Ridler, Neil, BA, MA, PhD - Economics
- Rogers, Robert, BSc, MASc, PhD, PEng - Mechanical Engineering
- Seabrook, William, NSc, MSc, PhD, DIC - Biology
- Sears, Alan, BEd, MEd, PhD - Education
- Sharp, Allan - BSc, PhD - Physics
- Shyu, Lawrence N., BA, MA, PhD - History
- Sousa, Antonio, MSc, DPhil - Mechanical Engineering
- Stoppard, Janet, BSc, MSc, PhD - Psychology
- Steward, Frank, SB, SM, ScD, PEng - Chemical Engineering & Centre for Nuclear Energy Research
- Stirling, Mary Lou, BA, MEd, EdD - Education
- Taylor, James, BSEE, MSEE, PhD - Electrical & Computer Engineering
- Thakkar, Ajit
- Thomas, Martin, L.H., BSc, MSA, PhD - Biology, Saint John
- Thompson, Gillian, BA (Hons), MA, PhD - History
- Terhune, John M. - BSc, MSc, Lic. Science - Saint John
- Toner, Peter, BA, MA, DPhil - History & Politics
- Tupper, Brian O.J., BSc, PhD, DSc, FIMA - Mathematics and Statistics
- Turner, Steven, BA, PhD - History
- van den Hoonaard, Will, BA, MA, PhD - Sociology
- Vanicek, Petr, MEng, PhD, DSc - Geodesy & Geomatics Engineering
- Veitch, Edward
- Wells, David, E., BSc, BASc, MASc, PhD, PEng - Geodesy and Geomatics Engineering
- Wiber, Melanie, BA, MA, PhD - Anthropology
- Williams, Paul F., BSc, MSc, PhD - Geology
- Wuest, Judith, BScN, MScN, PhD - Nursing

Librarian Emeriti:

- Crocker, Anne, BA, BLS
- Teskey, John, BA, MLS

Registrar Emeritus:

- Beckett, Barry, BSc, Dip Ed, PhD

Governor Emeriti:

- O'Brien, David, BBA, LLB, MSc, QC
- Ganong, David, BBA, MBA

Chancellor Emeritus:

- Currie, Richard J., OC, CBHF, MBA, LLD, PEng

RECIPIENTS OF THE DR. ALLAN P. STUART MEMORIAL AWARD FOR EXCELLENCE IN TEACHING

Fall Convocation 2021	• Hope Alderson (Mathematics & Stats, SJ) • Caroline Purdy (Mathematics & Stats, F)
Fall Convocation 2020	• Moira A. Law (Psychology, SJ) • Lucy Wilson (Geology, SJ)
Fall Convocation 2019	• Leah Bidlake (Computer Science, F) • Kelly Miles (Biology, F)
Fall Convocation 2018	• Osama El-Temtamy (Business, SJ) • Jessica Webster (Nursing, F)
Fall Convocation 2017	• Katherine Barclay (Biology, F) • Valerie Reeves (Chemistry, F)
Fall Convocation 2016	• Dongmin, Kim (Business, SJ) • Dowding, Barb (Biology, SJ)
Fall Convocation 2015	• Newling, Ben (Physics, F) • Hamm, Lyle (Education, F)
Fall Convocation 2014	• Rose, Sherry (Education, F) • Kennedy, Sean (History, F)
Fall Convocation 2013	• Golding, Jasen (Forestry & Environmental Management, F) • Johnson, John (SASE, SJ)
Fall Convocation 2012	• Belanger, Louis (Arts, SJ)
Fall Convocation 2011	• Gray, Christopher (Chemistry, SJ) • Civi, Eman (Business, SJ)
Fall Convocation 2010	• Durnford, Dionne (Biology, F) • Blatherwick, Mary (Education, F)
Fall Convocation 2009	• O'Sullivan, Lucia (Psychology, F) • Larivee, Catherine (Nursing, SJ)
Fall Convocation 2008	• John Grant McLaughlin (Education, F) • David Flagel (Humanities and Languages, SJ)
Fall Convocation 2007	• Merzik Kamel (Mathematical, Sciences, SJ) • Joanna Everitt (History & Politics, SJ)
Fall Convocation 2006	• Sandra Bell (English, SJ) • Phillip Sexsmith (Education, F)
Fall Convocation 2005	• Barbara Gill (Education, F) • Allan Reid (Culture & Language Studies, SJ)
Fall Convocation 2004	• Danielle Charron (French, F) • Nancy Nason-Clark (Sociology, SJ)
Encaenia 2003	• Kathleen Berry (Education, F) • Constantine Passaris (Economics, F)
Spring Convocation 2003	• Jim Keifer (Biology, SJ) • Sarah Maier (English, SJ)
Fall Convocation 2001	• E.W. (Ted) Robak (Forestry & Environmental Management, F) • Barry Bisson (Engineering, F)
Fall Convocation 2000	• Diana Austin (English, F) • Thom Erdle (Forestry & Environmental Management, F)
Fall Convocation 1999	• Lily Both (Psychology, SJ) • Paul MacDonald (Psychology, F)
Fall Convocation 1998	• Ruth Shaw (Math, Stats & CS, SJ) • Stephen Ross (Physics, F)
Fall Convocation 1997	• Kate Frego (Biology, SJ) • Wendy Robbins (English, F)
Fall Convocation 1996	• Judy Buchanan (Nursing, SJ)

	• James Murray (Classics & Ancient History, F)
Encaenia 1995	• Gracie Getty (Nursing, F) • Steven Turner (History, F)
Spring Convocation 1994	• Mohammad Hamdan (Mathematics, Stats & CS, SJ)
Encaenia 1994	• Lesley Flemming (Biology, F)
Encaenia 1993	• David Townsend (Law, F)
Spring Convocation 1993	• Robert Chanteloup (Sociology, SJ)
Fall Convocation 1992	• Phillip Wright (Administration, F)
Encaenia 1992	• Barbara Trenholm (Administration, F)
Encaenia 1991	• William Mullin (Biology, F) • Roger Ploude (English, F)
Encaenia 1990	• William Chernoff (Mathematics & Stats, F) • Byron Walton (Engineering, SJ)
Encaenia 1989	• Jane M. Fritz (Computer Science, F) • Friedrich Grien (Chemistry, F)
Encaenia 1988	• Teresa Killoran (Education, F) • James M. Tolliver (Administration, F)
Encaenia 1987	• Barbara MacKinnon (Biology, F) • Donald F. Rowan (English, F)
Spring Convocation 1986	• Pete McGahan (Dean of Faculty, SJ)
Encaenia 1986	• Jillian Sullivan (Mathematics & Stats, F)
Encaenia 1985	• Wiktor Askanas (Administration, F) • Arun J. Valsangkar (Civil Engineering, F)
Encaenia 1984	• David Rehorick (Sociology, F) • Beverly G. Smith (Law, F)
Encaenia 1983	• Reavley Gair (English, F) • G. Charles Kunn (Political Science, F)
Encaenia 1982	• Daniel M. Hurley (Law, F) • Linda A. Parker (Psychology, F)
Encaenia 1981	• Kevin Halcrow (Biology, SJ) • Howard MacFarlene (Civil Engineering, F)
Encaenia 1980	• Clayton R. Lewis (Mathematics, F) • C. Shirley MacLeod (Nursing, F)
Encaenia 1979	• Thomas A. Austin (Computer Science, F) • Daniel M. Keppie (Biology and Forestry, F)
Encaenia 1978	• Verne M. Ireton (Mechanical Engineering, F) • Ronald M. Lees (Physics, F)
Encaenia 1977	• Gilbert Allardyce (History, F) • Wilfred B.W. Martin (Sociology, F)
Encaenia 1976	• Sidney I. Pobishushchy (Political Science, F) • Joanne E. Harris (Mathematics, SJ)
Encaenia 1975	• Leonard C. Smith (Classics, F) • Lawrence E. Garey (Mathematics, SJ)
Encaenia 1974	• William Y. Smith (Economics, F) • Zdenek Valenta (Chemistry, F)
Encaenia 1973	• Allan P. Stuart (Chemistry, F) • R. Wayne Jollineau (Administration, F)
Encaenia 1972	• Leonard P. Edwards (Mathematics, F) • Barbara J. Pepperdene (Sociology, F)

UNB ASSOCIATED ALUMNI

The Associated Alumni was founded in 1862 for "the advancement of the interests of the University of New Brunswick by all honourable means." Its membership consists of all those who have attended at least one semester at UNB and numbers over 40,000.

The Alumni Council

Each spring the membership of the Associated Alumni elects a representative group of individuals to act as a council for the Alumni Association. This council meets at least three times a year and conducts the business of the Associated Alumni through the various committees. The Office of Alumni Affairs, an office of the University, works with the Council of the Associated Alumni in attaining its objectives.

Associated Alumni Objectives

1. The Association strives to enhance the image of the University in the eyes of the general public.
2. The Association is a liaison between the University administration and the student body.
3. The Association fosters good relations among the student body, the Fredericton and Saint John communities and the Alumni Association.
4. The Association endeavours to make students' stay at UNB as rewarding as possible, developing an "Alumni conscious" student body.
5. The Association assists the University in its fundraising activities with (a) governments, (b) private corporations and (c) individuals, be they Alumni or others.
6. The Association encourages, through personal contact and through its scholarship program, top-quality prospective students to attend UNB and maintains an interest in their welfare during their University careers.

Associated Alumni Council

EXECUTIVE

- President: Jill Jeffrey, BPE'82, BEd'83, Halifax, N.S.
- Vice- President: Jennifer Sutherland-Green, LLB'99, Fredericton, NB
- Treasurer: Bev Guimond, BBA'04, Saint John, NB
- Secretary: Robert Sharpe, BScCE'95, MScCE'02
- Saint John Rep: Olive Ozoemena, MBA'16, Saint John, NB
- Past President: Peter Syroid, BScME'98, D-TME'98, MBA'03, Fredericton, NB

REPRESENTATIVES TO BOARD OF GOVERNORS (with terms expiring)

- Peter Syroid, BScME'98, D-TME'98, MBA'03 (June 2024)
- Jill Jollineau, MEd'02, Saint John, NB (June 2022)
- Brooke DeLong, BA'95, Etobicoke, ON (June 2023)

COUNCILLORS (with terms expiring June 2022)

- Andrew Martel, BCS'15, Fredericton, NB
- Nathan Munroe, BBA'12, MBA'14, Saint John, NB

COUNCILLORS (with terms expiring June 2023)

- Sarah Birch, BBA'01, LLB'04, Halifax, NS
- Stephanie Fox, BBA'04, Saint John, NB

COUNCILLORS (with terms expiring June 2024)

- Ian Hardy, BBA'07, Saint John, NB
- Erin Stafford, BSc'08, Toronto, ON

STUDENT REPRESENTATIVES (with terms expiring 2022)

- Brennan Marks, Fredericton, NB
- Charlotte Fanjoy, Saint John, NB

OTHER MEMBERS

- UNB President: Dr. Paul Mazerolle, BA'89, Fredericton, NB
- Representative from the Associated Alumnae: Jane Kidney-Hermelin, BBA'97, Fredericton, NB
- Association Executive Director: Michelle McNeil, BBA'03, MBA'09, Fredericton, NB

UNB ASSOCIATED ALUMNAE

The Associated Alumnae was founded in 1910 and incorporated in 1919. The object of the Association is to promote, directly and indirectly, the educational and financial interests of the University, especially as such interests are related to the women graduates and undergraduates of the University. Membership in the Associated Alumnae consists of women graduates and former women students of the University who have successfully completed one year.

The Association furnished and equipped UNB's first residence for women, the Maggie Jean Chestnut House, generously donated to the Alumnae by Lord Beaverbrook. In May 1952, this residence was transferred to the University. The Alumnae Memorial Library, located in Lady Dunn Hall, and libraries in other residences for women students, were established and are maintained by the Association.

The Associated Alumni annually awards several scholarships to women students, including: an Entrance Scholarship in Education named in honour of Muriel Farris Bird; the Zula V. Hallet Scholarship, awarded to a woman student entering third-year Physical Education, the Marion Fleet Rogers Scholarship to a woman student entering third year at UNB Saint John; and an award for part-time students. The total annual value of all scholarships provided exceeds $18,000. Two prizes, the Dorothy Elson Prize and the Agnes Grey Wilson Prize, are also donated by the Associated Alumnae.

Associated Alumnae Council

EXECUTIVE

- President: Jennifer Ward, BBA'08, Fredericton, NB
- Past President: Jennifer Sutherland-Green, LLB'99, Fredericton, NB
- 1st Vice-President: Jane Kidney-Hermelin, BBA'97, Fredericton, NB
- 2nd Vice-President: Deanna Stewart, BSc'87, Fredericton, NB
- Secretary: Emilie Chiasson, BPhil'15, Rothesay, NB
- Treasurer: Jane Kidney-Hermelin, BBA'97, Fredericton, NB
- Past President: Jennifer Sutherland-Green, LLB'99, Fredericton, NB

COUNCILLORS

- Mary Jo McIntosh, MEd'80, New Maryland, NB
- Lana Tingley-LaCroix, BBA'94, Fredericton, NB
- Brenda Johnston-Samson, BEd'90, MEd'01, Fredericton, NB
- Sharon Crabb, BEd'79, MEd'93, Lower St. Mary's, NB
- Chloe Jardine, PHIL'19, Fredericton, NB

For more information go to: http://alumni.unb.ca/

SECTION A: UNB HISTORICAL SKETCH

Section Contents

PRINCIPALS (1820-1860) AND PRESIDENTS OF THE UNIVERSITY (1861-PRESENT)

James Somerville	1820-1829
Edwin Jacob	1829-1860
Joseph Head	1860-1861
William Brydone Jack	1861-1885
Thomas Harrison	1885-1906
Cecil Charles Jones	1906-1940
Norman MacKenzie, C.C.	1940-1944
Milton F. Gregg, V.C.	1944-1947
A. Foster Baird	1947-1948
Albert Trueman, O.C.	1948-1953
C. William Argue (Acting)	1953
Colin B. Mackay, O.C., Q.C.	1953-1969
James O. Dineen	1969-1972
Desmond Pacey (Acting)	1972-1973
John M. Anderson	1973-1979
Thomas J. Condon (Acting)	1979-1980
James Downey, O.C.	1980-1990
Robin L. Armstrong	1990-1996
Elizabeth Parr-Johnston	1996-2002
James F. O'Sullivan (Acting)	1997
John D. McLaughlin	2002-2009
H.E.A. Eddy Campbell	2009 - 2019
Paul Mazerolle	2019 - Present

FREDERICTON CAMPUS HISTORY

As the American Revolutionary war drew to a close, thousands of Loyalists gathered in New York City to await transportation to homes in other British Colonies. Among these Loyalists were Charles Inglis, a former interim President of King's College, New York (Columbia University); Benjamin Moore, later President of Columbia; and Jonathan Odell, minister, poet and pamphleteer. These men were the visionaries of their day. In the midst of war, privation and exile, they drew up a plan for the future education of their sons in the Nova Scotia wilderness. Recognizing that the new American nation would provide instruction only in revolutionary "Principles contrary to the British Constitution" and that the cost of an overseas education would be prohibitive, they urged the representatives of the British government to consider the "founding of a College… where Youth may receive a virtuous Education" in such things as "Religion, Literature, Loyalty, & good Morals…"

Initially, these gentlemen intended that the area of Nova Scotia have only one college. However, in 1784 when the Province of New Brunswick was created from a part of Nova Scotia, New Brunswickers began a clamour for their own school which led to the foundation of two of Canada's oldest institutions of higher learning - King's College, Windsor, Nova Scotia (now affiliated with Dalhousie University) and the academy which became the University of New Brunswick.

UNB began with a petition presented to Governor Thomas Carleton on 13 December 1785. Headed by William Paine, the seven memorialists asked Carleton to grant a charter of incorporation for an "academy of school or liberal arts and sciences," which they maintained would result in many "public advantages and… conveniences." In addition, the "principal Officers of disbanded Corps and other Inhabitants" in and around the provincial capital of Fredericton asked that the Governor reserve a substantial grant of land in support of this academy.

Despite the approval of Carleton, it was many months before the academy opened. During this period a draft charter was written, based on the 1754 Charter of King's College, New York, urging that the college never "exclude or restrain any Person…of any religious Denomination, Sect or Profession…from equal…Liberties, Privileges, [or] Degrees"- a very liberal notion in the eighteenth century. Unfortunately, times were changing in New Brunswick and such sentiments seemed to recall the recent American Revolution. Therefore, while the academy had commenced operations by the 1790s, it functioned less as a college and more as a symbol of Carleton's governmental policy for the promotion of twin tenets of the Anglican religion and the British Constitution. As the provincial

leaders of the opposition dismissed the academy of as nothing but a "country school," Carleton realized he must more actively and effectively offer its support. On 12 February 1800, over the signature of Provincial Secretary Jonathan Odell, the College of New Brunswick received a Provincial Charter, the first college in Canada to be so honored. It was intended that the academy would serve as the College's preparatory school and that the two would be governed by a Common College Council drawn almost entirely from the ranks of a governmental hierarchy. As for the professors, they were all to be Anglicans.

For a number of years, the history of the future University continued to lie with the academy. A series of masters came and went until 1811 when the Reverend James Somerville, an ex-patriate Scotsman, took the position of Principal Preceptor. There can be no question that Somerville, a graduate of the University of Aberdeen, was a superb teacher who provided the Council and New Brunswick with their first chance to have a real college. In 1820, Somerville, was formally named president of the College of New Brunswick and, in April 1822, he held the very first college classes in Fredericton. This development helped spur efforts to set the institution on a firmer footing. A new Charter for "Brunswick College" was proposed in 1823, asking for permanent and substantial funding directly from the King. Lieutenant Governor Sir Howard Douglas quickly threw his influence behind the scheme. Douglas viewed the welfare of the College to be of prime importance to the success of New Brunswick. To this end, he pressed for a Royal Charter and urged the erection of a fine stone building to house the institution.

Three designs for the building were submitted in 1825 to the Council, which selected that drawn by J.E. Woolford. There was, of course, a good deal more involved in the transformation of the neglected College of New Brunswick into King's College, Fredericton. Douglas spent the next four years keeping a wary eye on the growth of his "child". In 1826, having chosen the site for the building himself, Douglas laid the cornerstone. In December 1827, largely through Douglas' efforts in Great Britain, King's College, Fredericton, received a Royal Charter nearly identical to that granted to King's College, Toronto. Before allowing the new Charter to take effect, the College of New Brunswick performed one final, official act, on 21 February 1828, by awarding degrees to its first and last three graduates.

On 1 January 1829, King's College and the structure (now known as Sir Howard Douglas Hall, formerly referred to as the Old Arts Building) erected to house it were officially opened. In one way, King's was a failure. In its thirty-year tenure it graduated fewer than 125 students, in large measure because its classical curriculum was not well-suited to the needs of New Brunswickers. Yet, it was at King's that many of the courses offered in later years by the University of New Brunswick had their start. In 1834, for example, three of the professors proposed admitting "young men of good abilities and diligence" to a special, one-year course entitling each to a teacher's certificate. Even after the creation of the Provincial Normal School this kind of university training continued sporadically and in various forms until the Faculty of Education emerged in the twentieth century.

It was also in the 1830s that King's introduced "public lectures," more familiar to today's students as "extension courses". These early lectures dealt with subjects such as geology, chemistry, physics and astronomy. Much to the disgust of one professor, James Robb, some of his lectures at the College were open to the general public, including the young women of Fredericton. Some years later, Mr. McMahon Cregan, an engineer from England who was brought to New Brunswick to conduct a survey for the European and North American Railway, offered "instruction of a really practical and useful character" in the field of engineering to students and non-students alike.

King's spent several tumultuous periods in conflict with members of the New Brunswick Legislature. Ostensibly, they were arguing over the issues of the curriculum and religion but the real issue was probably the cost of higher education. Fortunately, King's did have defenders, in particular, the elegant debater William Needham who, in the face of threats to burn down the College or to turn it into an agricultural school, made an impassioned speech that saved the institution from such ignominious fates. Through the efforts of Needham, Lieutenant Governor Sir Edmund Head and a few others, the Legislature was persuaded to reform rather than destroy the College. On 13 April 1859, the act creating the secular, provincial University of New Brunswick was passed.

At first, the UNB charter seemed to promise more than the University could deliver but, slowly, under the guidance and tutelage of several innovative professors, both the University's attitude and curriculum blossomed. In 1880, UNB began offering a certificate to those women who performed well in entrance (matriculation) examinations, though women were not permitted to enrol at the University. In 1885 a brilliant young woman named Mary Kingsley Tibbits met head-on the University's stricture against women and, in 1886, became UNB's first, regularly admitted, woman student. The racial barrier had been broken earlier with the completely non-controversial entry of Arthur St. George Richardson, a black who came to UNB via Bermuda and Saint John. Gradually, the University expanded its educational horizons. In 1887 the four-year program was introduced and in 1891 a Bachelor of Science degree was added to complement the traditional BA. Just after the turn of the century,

when Cecil Charles Jones took over as Chancellor of the institution, whose title subsequently was changed to that of President, the foundations were laid for three major faculties: Law, Engineering and Forestry.

The post-World War I era brought the first great expansion of the physical facilities of the campus. In 1920, UNB consisted of the Sir Howard Douglas Hall (Old Arts Building), the Science Building, the small Observatory, a small gymnasium and the Dominion Entomological Laboratory. By 1931, Memorial Hall, a modern Library and a Forestry and Geology Building had been added. The first university residence was a gift from Lord Beaverbrook who, growing up in New Brunswick as William Maxwell Aitken, studied law, and over the succeeding years developed an increasing interest in the welfare of the university. Other buildings brought into being through his efforts and those of his family were the Lady Beaverbrook Gymnasium, Aitken House, Ludlow Hall, for the Faculty of Law, and the Aitken Centre. In 1947, his Lordship became the University's Chancellor, to be succeeded by his son, Sir Max Aitken, in 1966 and in turn by Lady Violet Aitken, the wife of Sir Max, who served until 1993.

After World War II, returning veterans pushed registration to over 770 in 1946, almost double the number enrolled in 1941. With this increased student population came a commensurate increase in faculty and course offerings, and a surge of building activity from 1953 to 1977 that transformed the campus. The year 1964 brought three important developments. Teachers' College (the old Provincial Normal School) was relocated on the campus, to become incorporated into an enlarged Faculty of Education in 1973; St. Thomas University also relocated on campus, moving from Chatham and affiliating with UNB; and a second UNB campus was established in Saint John.

UNB reached the end of its second century as a major provincial and national institution, offering a wide range of graduate and undergraduate programs in administration, arts, computer, science, education, engineering, forestry, law, nursing, physical education and science: the University enters its third century proudly treasuring its past and eagerly facing the challenges of the future.

SAINT JOHN CAMPUS HISTORY

The University of New Brunswick Saint John was established in September 1964 following the recommendation of the Royal Commission on Higher Education, chaired by the late Dr. John J. Deutsch of Queen's University. The Deutsch Commission emphasized the need for facilities for higher education in this metropolitan community of over 100,000 persons.

During the first five years of operation, classes were offered in the first two years of degree programs in Arts and Science, Business, Engineering, Physical Education, Forestry and Nursing. Classes took place at various locations in the city of Saint John, including Beaverbrook House, formerly the home of the UNB Faculty of Law. In the fall of 1969, the new campus at Tucker Park was opened consisting of three buildings - Sir Douglas Hazen Hall, William Ganong Hall and the Ward Chipman Library Building. This site, proposed by the City Council as early as 1963, was originally bequeathed to the City of Saint John for park purposes. At the request of the City, the New Brunswick Legislature authorized the conveyance of a portion of this land for the new campus.

In 1975 the G. Forbes Elliot Athletics Centre was added to the physical plant. Since its opening, the versatile, well-equipped building has served the recreational needs of both the campus and greater Saint John communities. In 1985 the Jeux Canada Games Stadium was constructed on campus, and in 1986 the Thomas J. Condon Student Centre was opened.

UNB Saint John's physical facilities expanded again in the 1990s with the opening of the new academic building, Phillip W. Oland Hall, in late 1992, and the addition of the campus's first on-site student housing facility, the Sir James Dunn Residence, in the fall of 1993. K.C. Irving Hall, opened in January 1999, followed by the Colin B. MacKay residence and Saint John College in 2003.

A special feature of UNB Saint John is the fact that many of the permanent buildings on the campus are connected by a series of tunnels and walkways, allowing comfortable access to all facilities during inclement weather and the months of winter.

UNB Saint John now offers full four-year degree programs in Applied Management, Arts, Business Administration, Computer Science, Data Analysis, Economics, Education, Financial Mathematics, Health Sciences, Information Sciences, Nursing and Science. Students now enrol in the first two years of Engineering programs on the Saint John campus, after which they would transfer to the Fredericton campus to complete the degree. The campus is also home to a number of Masters students whose research is contributing to regional, national, and international endeavours. In addition to the full-time enrolment, many of part-time students are now pursuing their studies at the Saint John campus.

FREDERICTON HISTORIC BUILDINGS

Burden Academy

As a Centennial project, the University brought to the campus and restored a one-room New Brunswick schoolhouse, located more than a

hundred years at Burden in York County. The schoolhouse, located at the King's College Road entrance, was officially opened in May 1967.

McCord Hall

McCord Hall located at the east entrance of the Sir Howard Douglas Hall (Old Arts Building), was once used as the University's ice house. The nineteenth-century structure was restored in 1963 and named in honour of David T.W. McCord, the distinguished writer and former executive director of the Harvard University Fund Council, and honorary graduate of UNB.

The Neville Homestead

The Neville Homestead, a small white clapboard house on the east side of the campus, dates back to 1876. It was the home of Fred Neville, University groundskeeper for 42 years, who lived in the house from his birth in 1878 to his death in 1969. The Neville family first settled the land in 1850 with a purchase from Hon. William Odell. In its 84th year, the house was moved a short distance to its present location to make way for a new men's residence, named to honour Mr. Neville. The Homestead now houses the Student Employment Service.

Sir Howard Douglas Hall

The building that housed King's College is now known as the Sir Howard Douglas Hall (Old Arts Building) and is the oldest university building in Canada still functioning as a viable part of a university campus. In the Great Hall are portraits of past president and two memorial stained glass windows. Immediately to the left of the front entrance is the Edwin Jacob Chapel, named in memory of Vice-President and Principal of King's College. A permanent display illustrating the history of the University is located in the Great Hall, including the cornerstone of the building, laid in 1826 and excavated in 1978 prior to the sesquicentennial celebrations.

William Brydone Jack Observatory

The Observatory, located at the east entrance to the Sir Howard Douglas Hall (Old Arts Building), was built in 1851 through the efforts of William Brydone Jack, Professor of Mathematics and Natural Philosophy at King's College and later President of UNB. Constructed of wood, it has an octagonal tower especially designed to house its equatorial telescope. It now houses a small museum.

Richard J. Currie Center

The Richard J. Currie Center is named after UNB's Chancellor (Richard J. Currie) a UNB alumnus, and generous supporter of the University. The five story 139,000 square foot building is among the single largest construction projects in Fredericton's History. Officially opened in October 2011 the Currie Center was designed to address the integrated wellness needs of the University of New Brunswick and the greater Fredericton Community. It provides facilities for fitness, recreation and high-performance athletics as well as new space for community research activities and services.

SAINT JOHN CAMPUS BUILDINGS

Sir Douglas Hazen Hall

This building is named for Sir Douglas Hazen (1860-1937), a prominent former premier, member of the federal cabinet and Chief Justice of the province. Hazen Hall houses the offices of all departments in the Faculty of Arts, the campus computing centre, classrooms and a 240 -seat lecture theatre.

William Ganong Hall

The Science building, William Ganong, is named after Francis William Ganong (1864-1941), a graduate of UNB, long-time faculty member at Smith College and a former president of the Botanical Society of America. The four-storey building is designed to provide facilities for Biology, Chemistry, Geology and Physics. Ganong Hall houses the largest lecture theatre on the campus, a micro-lab, a spacious display area, student laboratories, and facilities of a more specialized nature, such as a large greenhouse, a controlled environment room and research laboratories.

Philip W. Oland Hall

W. Oland Hall opened in December, 1992 at UNB Saint John and houses the Faculty of Business and most of its administrative offices, including the Registrar's Office, the Business Office, the President's Office, the Vice-President's Office, the Advancement Office, the Alumni Office, and Student Services. Five classrooms, an audio-visual theatre, a business case room with four break-out labs and a micro-computer lab are also contained in Philip W. Oland Hall.

The building is named for one of UNB's staunchest supporters. A loyal alumnus (BSc 1930, DLitt 1978), Phillip W. Oland (1910-1996) was chairperson and CEO of Moosehead Breweries Ltd. Dr. Oland dedicated a lifetime of service to his country and his community. He served in the Canadian Armed Forces during World War II, was the founder of the New Brunswick Youth Orchestra and sat on numerous board and committees

for such organizations as the United Way, the YM/YWCA, the University of New Brunswick and St. Thomas University.

Ward Chipman Building

The Ward Chipman building, one of the three original buildings on campus, is named in honor of Ward Chipman (1754-1824), a Massachusetts Loyalist who was deputy muster-master general to the British forces during the American Revolution; thereafter, he settled in Saint John where he culminated a distinguished legal career in being named to the New Brunswick Supreme Court. As of 2011, the Ward Chipman building is being renovated to reflect the current needs of the campus.

K.C. Irving Hall

The K.C. Irving Hall is one UNB Saint John's newest academic buildings, opened in fall 1999. The home of the campus's Biology, Engineering and Nursing Departments, Irving hall features modern classrooms and state-of-the-art research and computer laboratories.

The building is named for Kenneth Colin Irving, in recognition of his family's significant contribution to the economy of New Brunswick and to the lives, culture and education of New Brunswickers. The Irving's have provided generous support to the university as well as numerous community groups and initiatives.

Thomas J. Condon Student Centre

UNB Saint John's Student Centre, located adjacent to the Athletics Centre, is interconnected to the other buildings on campus by an overhead walkway and an underground tunnel. The centre houses the cafeteria, Student Representative Council offices, a social club and lounge. The building was named in honour of Vice-President Emeritus Thomas J. Condon.

G. Forbes Elliot Athletics Centre

UNB Saint John's Athletics Centre features a 30,000 square foot surface with an all-purpose synthetic floor. The Athletics Centre includes space for four basketball courts, four tennis courts, four volleyball courts, six badminton courts and a four-lane running track. There is also plenty of space for activities such as soccer and flag football. Spectators can enjoy the University's athletic teams, the Seawolves, from the 900 bleacher seats overlooking the main court surface. The ground floor includes locker and shower rooms, equipment storage rooms, a trainer's room, and an officials' room. Upstairs, there are a suite of offices and a reception area, a classroom, lounge, games room, and conditioning room.

The Athletics Centre serves the recreational and physical education needs of UNB Saint John students, faculty and staff, as well as several community groups. The Centre bears the name of the founding principal of UNB Saint John.

Canada Games Stadium

UNB Saint boasts one of the finest track and field facilities in the country. A legacy of the 1985 Jeux Canada Games, the stadium has a 400-metre, eight-lane all weather running track and a natural grass infield lighted for night play. There is fixed seating for 5,000, a press box, and other auxiliary facilities.

Sir James Dunn, Barry and Flora Beckett, and Dr. Colin B. Mackay Residences

UNB Saint John offers three on-campus residences overlooking the beautiful Kennebecasis River. At UNB Saint John all housing is non-smoking, co-ed and security locked.

The Dr. Colin B. Mackay residence, opening September 2003 and was designed with input from our very own students. It offers 170 beds in the form of spacious double suites for independent style living. Suites include two single bedrooms, kitchenette, complete with microwave and fridge, as well as a private three-piece bath that is shared only with your suitemate. Each room is furnished with a double bed and desk set.

The Barry and Flora Beckett Residence is our newest addition, offering UNB Saint John students a brand new style of room known as adjoining singles. The larger than normal bedroom includes an adjustable double bed, a manager's desk and chair, a premium dresser and a semi-private washroom. The semi-private washroom includes a shared shower and toilet, with students having their own private sink with ample storage. A limited number of private singels are also available. The Barry and Flora Beckett Residence offers 104 beds.

The Sir James Dunn Residence, which opened in September 1993, offers 79 beds with Single and Double rooms available, each furnished with a dresser/wardrobe and desk set. Construction of the Dunn was made possible by a generous donation from the Sir James Dunn Foundation. It is named in honour of the noted Canadian industrialist and philanthropist, Sir James Dunn, who was a native of Bathurst, NB.

All of our residences have standard house amenities include furnished TV rooms and study lounges, high-speed Internet and cable TV connections and laundry facilities.

Hans W. Klohn Commons

Hans W. Klohn Commons opened in September 2011. The commons offers students the latest in technology, writing and library services. It houses a student technology centre; writing, math and statistics tutoring centres; and classroom and conference rooms. It integrates IT, information services, the computing centre and library in a single place. The Commons is named for prominent New Brunswick businessman Hans W. Klohn who is well known for his many contributions to the steel fabrication and construction industry in Atlantic Canada and beyond.

Annexes

The annexes house facilities for the International Office, International Recruiting, the Student Health Centre, and for part-time faculty and graduate students.

For more information regarding the History of UNB please visit: http://www.unb.ca/aboutunb/history/index.html.

	Bachelor of Arts Bachelor of Applied Arts (FR) Bachelor of Philosophy in Leadership Studies (FR)	Bachelor of Science in Kinesiology (FR)	Bachelor of Science Bachelor of Medical Laboratory Science (FR) Bachelor of Arts/Bachelor of Science (FR) Bachelor of Arts and Science (FR) Bachelor of Science and Bachelor of Computer Science (FR)	Bachelor of Science in Forestry (FR) Bachelor of Science in Environment and Natural Resources (FR)	Bachelor of Nursing	Bachelor of Science in Economics (SJ) Bachelor of Health Sciences (SJ)	Bachelor of Health (SJ)
Important Information		All admissions are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission. Ontario applicants may present PSE4U Exercise Science to satisfy the senior Biology requirement.	Applicants who do not meet the admission requirements for direct entry to the Bachelor of Science may be considered for conditional admission. See note #11. The University of New Brunswick offers both a four-year Bachelor of Arts and Science and a five-year concurrent Bachelor of Arts/Bachelor of Science (two-degree) program at UNB Fredericton.	Applicants who do not meet the admission requirements for direct entry to the Bachelor of Science in Forestry degree program, but offer a minimum admission average of 60% (and other conditions as may be required by the admitting faculty) may be given conditional admission to the appropriate faculty in an entrance program. See Note #11.	All admissions are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission. If a higher level Math course in the pre-calculus stream is presented, the math course with the highest grade will be considered for admission purposes.	Prospective students with Grade 12 English, Grade 12 Math and any combination of two Grade 12 sciences (Biology, Chemistry, Geology or Physics) will be considered for admission at the discretion of the faculty, and are encouraged to apply.	
Minimum Average Requirements	Minimum Required Averages in English/Français 60% Minimum Admission Average Leadership -75% Minimum Admission Average Arts/Applied Arts - 65%	Minimum Required Averages in English/Français 60% Minimum Admission Average 75%	Minimum Admission Average 75% Minimum average in senior Mathematics, Chemistry and the best other science course must be at least 75%.	Minimum Required Averages in English/Français, Math(s), Sciences 70%. Minimum Required Average for Group Elective 60%. Minimum Admission Average 75%	Minimum Required Averages in English/Français, Math, Chemistry and Biology 70% Minimum Admission Average 75%	Minimum Required Average in English 60% Minimum Admission Average 75% Minimum average in senior Mathematics, Chemistry and the best other science course must be at least 75%	Minimum Required Averages in English/Français 60% Minimum Admission Average 75%
New Brunswick Anglophone	English 122 4 electives: Group 1 1 elective: Group 1, 2, or 3	English 122 Pre-Calculus A 120 Pre-Calculus B 120 2 of Biology 122, Chemistry 122, or Physics 122 1 elective: Group 1, 2, or 3	English 122 Pre-Calculus A 120 Pre-Calculus B 120 Chemistry 122 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	English 122 Pre-Calculus A 120 Pre-Calculus B 120 Biology 122 or Physics 122 Chemistry 122 1 elective: Group 1 or 2	English 122 Pre-Calculus 110 or Foundations of Math 120 Chemistry 12 Biology 122 2 elective: Group 1	English 122/Français Pre-Calculus A 120 Pre-Calculus B 120 Physics 122 Chemistry 122 1 elective: Group 1 or 2	English 122 Pre-calculus 110 or Foundations of Math 120 1 of Chemistry 122, Biology 122 or Physics 122 1 elective: Group 1 or 2 1 elective: Group 1,2, or 3

New Brunswick Francophone	Français 10411 4 electives: Group 1 1 elective: Group 1, 2, or 3	Français 10411 Mathematique 30331C Mathematique 30411C 2 of Biologie 53411, Chimie 52411 or Physique 51411 1 elective: Group 1, 2, or 3 or 5	Français 10411 Mathematique 30331C Mathematique 30411C Chimie 52411 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	Français 10411 Mathematique 30331C Mathematique 30411C Chimie 52411 Biologie 53411 or Physique 51411 1 elective - Group 1 or 2	Français 10411 Mathematique 30321B or Mathematique 30331C' Chimie 52411 Biologie 53411* 2 electives: Group 1	Français 104112 Mathematique 30331C Mathematique 30411C Physique 51411 Chimie 52411 1 elective: Group 1 or 2	Français 10411 Mathematique 30321B or Mathematique 30331C 1 of Chimie 52411, Biologie 53411 or Physique 51411 1 elective: Group 1 or 2 1 elective Group 1,2, or 3
Prince Edward Island	English 621 4 electives: Group 1 1 elective: Group 1,2, or 3	English 621 Math 621B 2 of: Chemistry 3202, Biology 3201 or Physics 3204 1 elective: Group 1, 2, 3 5	English 621 Math 621B Chemistry 621 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	English 621 Math 621B Chemistry 621 Biology 621 or Physics 621 1 elective: Group 1 or 2	English 621 Math 521A or Math 521B Chemistry 621 Biology 621 2 electives: Group 1	English 621 Math 621B Physics 621 Chemistry 621 1 elective: Group 1 or 2	English 621 Math 521A or Math 521B 1 elective: Group 1 or 2 1 elective: Group 1, 2, or 3
Nova Scotia	English 12 4 electives: Group 1 1 elective: Group 1, 2, or 3	English 12 Pre-Calculus 12 2 of: Chemistry, Biology 12, or Physics 12 1 elective: Group 1,2,3 or 5	English 12 Pre-Calculus 12 Chemistry 12 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	English 12 Pre-Calculus 12 Chemistry 12 Biology 12 or Physics 12 1 elective: Group 1 or 2	English 12 Pre-Calc 11 or Mathematics 12 Chemistry 12 Biology 12 2 electives: Group 1	English 12 Pre-Calculus Math 12 Physics 12 Chemistry 12 1 elective: Group 1 or 2	English 12 Pre-calc 11 or Mathematics 12 1 of Chemistry 12, Biology 12 or Physics 12 1 elective: Group 1 or 2 1 elective: Group 1,2, or 3
Newfoundland and Labrador	English 3201 4 electives: Group 1 1 elective: Group 1, 2, or 3	English 3201 Math 3200 2 of: Chemistry 3202, Biology 3201 or Physics 3204 1 elective: Group 1,2, 3 or 5	English 3201 Math 3200 Chemistry 3202 1 of Physics 3204, Biology 3201 or another provincially approved science 1 elective: Group 1 or 2	English 3201 Math 3200 Chemistry 3202 Biology 3201 or Physics 3204 1 elective: Group 1 or 2	English 3201 Pre-Calc 11 or Mathematics 12 Chemistry 12 Biology 12 2 electives: Group 1	English 3201 Math 3200 Physics 3204 Chemistry 3202 1 elective: Group 1 or 2	English 3201 Pre-calculus 11 or Mathematics 12 1 of Chemistry 3202, Biology 3201, or Physics 3204 1 elective: Group 1 or 2 1 elective: Group 1, 2, or 3
Quebec (Secondary School Diploma)	English 516 4 electives: Group 1 1 elective: Group 1,2, or 3	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 2 of: Chemistry 534, Biology 534 orPhysics 534 1 elective: Group 1, 2, 3 or 5	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Chemistry 534 1 of Physics 534, Biology 534, or other provincially approved science 1 elective: Group 1 or 2	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Chemistry 534 or Physics 534 1 elective: Group 1 or 2	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Chemistry 534 Biology 534 2 electives: Group 1	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Physics 534 Chemistry 534 1 elective: Group 1 or 2	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 1 of Chemistry 534, Biology 534 or Chemistry 534 1 elective: Group 1 or 2 1 elective Group 1, 2, or 3
Ontario	English 4U 4 electives: Group 1 1 elective: Group 1, 2, or 3 See Note # 13	English 4U Math MHF4U 2 of: Chemistry SCH4U, Biology SBI4U or Physics SPH4U 1 elective: Group 1,2, 3 or 5 See Note #13	English 4U Math MHF4U Chemistry SCH4U 1 of Physics SPH4U, Biology SBI4U or other provincially approved science 1 elective: Group 1 or 2	English 4U Math MHF4U Chemistry SCH4U Biology SBI4U or Physics SPH4U 1 elective: Group 1 or 2 See Note #13	English 4U Math MCF3M or Math MCR3U Chemistry SCH4U Biology SBI4U 2 electives: Group 1 (Ontario students may presentPSK4U as a Group 1 elective for Nursing only)	English 4U Math MHF4U Physics SPI4U Chemistry SCH4U 1 elextive: Group 1 or 2 See Note #13	English 4U Math MCF3M or Math MCR3U 1 of Chemistry SCH4U, Biology SBI4U or Physics SPH4U 1 elective: Group 1 or 2 1 elective: Group 1,2, or 3 See Note #13

19

			See Note #13				
MB, SK, AB, BC, NT, NU, YK See note #20	English 12 4 electives: Group 1 1 elective Group: 1, 2 or 3	English 12 Pre-Calculus Math 12 2 of: Chemistry 12, Biology 12 or Physics 12 1 elective: Group 1,2, 3 or 5	English 12 Pre-Calculus Math 12 Chemistry 12 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	English 12 Pre-Calculus Math 12 Chemistry 12 Biology 12 or Physics 12 1 elective: Group 1 or 2	English 12 Pre-Calculus 11 or Math 12 Chemistry 12 Biology 12 2 electives: Group 1	English 12 Pre-Calculus Math 12 Physics 12 Chemistry 12 1 elective: Group 1 or 2	English 12 Pre-calculus 11 or Math 12 1 of Chemistry 12, Biology 12 or Physics 12 1 elective: Group 1 or 2 1 elective Group 1,2, or 3
United States See Note #16	English 12 4 electives: Group 1 1 elective: Group 1, 2, or 3	English 12 Math 12 (including Pre-Calculus) 2 of: Chemistry 12, Biology 12 or Physics 12 1 elective: Group 1,2,3 or 5	English12 Math 12 (including Pre-Calculus) Chemistry 12 1 of Physics 12, Biology 12 or other state approved Science 1 elective: Group 1 or 2	English 12 Math 12 (including Pre-Calculus) Chemistry 12 Biology 12 or Physics 12 1 elective: Group 1 or 2	English 12 Pre-Calculus 11 or Math 12 Chemistry 12 Biology 12 2 electives: Group 1	English 12 Math 12 (including Pre-Calculus) Physics 12 Chemistry 12 1 elective: Group 1 or 2	English 12 Pre-Calculus 11 or Math 12 1 of Chemistry 12. Biology 12 or Physics 12 1 elective: Group1 or 2 1 elective: Group 1,2 or 3

	Bachelor of Computer Science (FR) Bachelor of Science in Computer Science (SJ) Bachelor of Arts/Bachelor of Computer Science (FR)	Bachelor of Recreation and Sport Studies (FR)	Bachelor of Science in Engineering	Bachelor of Science in Software Engineering	Bachelor of Geomatics (FR)	Bachelor of Business Administration
Important Information	Bachelor of Computer Science/Science in Computer Science: Applicants who do not meet the admission requirements for direct entry to the degree program, but offer a minimum admission average of 60% (and other conditions as may be required by the admitting faculty) may be given conditional admission to the appropriate faculty in an entrance program to the extent that capacity allows. See Note #12. All admissions to the Faculty are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission. The University of New Brunswick also offers a five-year concurrent Bachelor of Computer Science/Bachelor of Science (two-degree) program at UNB Fredericton.	All admissions are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission. Ontario applicants may present PSE4U Exercise Science to satisfy the senior Biology requirement. New Brunswick students interested in the BRSS-Education concentration, Pre-Calculus 11 is recommended.	All admissions to the Faculty are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission. Students who are do not present Chemistry or Physics for direct entry into the degree program but who offer a competitive admission average may be eligible for an Engineering Entrance program. All first-year Bachelor of Science in Engineering students begin study in a common first term of courses (ENG-1). Subsequent admission to one of the specific disciplines (Civil, Chemical, Electrical, Geological, Mechanical, and Geomatics) is competitive and is based on academic performance in first year. Only the first two years of the	All admissions to the program are on a competitive basis; satisfaction of the minimum requirements does not guarantee admission.		Applicants who are missing the pre-calculus requirement for direct entry to the Bachelor of Business Administration Fredericton degree program but offer a minimum admission average of 75% may be given conditional admission to the program with the stipulation that they complete MATH 0863 during their first year. Students who do not complete MATH 0863 by the end of their first year may be required to withdraw from the Bachelor of Business program.

			Bachelor of Science in Engineering program are offered at UNB Saint John.			
Minimum Average Requirements	Minimum Required Average in English/Français 60%; Math(s) and Science 65% and elective 60%. Min. Admission Average 75%	Minimum Required Averages in English/Français 60% Minimum Admission Average 75%	Minimum Required Averages in English/Français, Math(s), Physics and Chemistry 70% Minimum Required average in Group Elective 60% Minimum Admission Average 75%	Minimum Required Averages in English/Français, Math(s), Physics and Chemistry 70% Minimum Required average in Group Elective 60% Minimum Admission Average 75%	Minimum Required Averages in English/Français, Math(s), Group 1 courses 70% (one elective may be 60%) Minimum Admission Average 75%	Minimum Required Average for each course 60%. Min. Admission Average 75%
New Brunswick Anglophone	English 122 Pre-Calculus A 120 Pre-Calculus B 120 1 of Biology 122, Physics 122 or Chemistry 122 1 elective: Group 1 1 elective: Group 1 or 2	English 122 Foundations of Math 120 1 of: Biology 122, Chemistry 122, or Physics 122 2 electives: Group 1 1 elective: Group 1,2, 3 or 5.	English 122 Pre-Calculus A 120 Pre-Calculus B 120 Physics 122 Chemistry 122 1 elective: Group 1,2, or 4	English 122 Pre-Calculus A 120 Pre-Calculus B 120 Physics 122 Chemistry 122 1 elective: Group 1,2, or 4	English 122/Français Pre-Calculus A 120 Pre-Calculus B 120 3 electives: Group 1 (Physics Recommended)	English 122 Pre-Calculus A 120 Pre-Calculus B 120 2 electives: Group 1 1 elective: Group 1, 2 or 3
New Brunswick Francophone	Français 10411 Mathematique 30311C Mathematique 30411C 1 of Biologie 53421, Physique 51411 or Chimie 52411 1 ellective: Group 1 1 elective: Group 1 or 2	Français 10411 Mathematique 30321B or Mathematique 30331C 1 of: Biologie 53411, Chimie 52411, or Physique 51411 2 electives: Group 1 1 elective: Group 1, 2,3 or 5	Français 10411 Mathematique 30331C Mathematique 30411C Physique 51411 Chimie 52411 1 elective: Group 1, 2 or 4	Français 10411 Mathematique 30331C Mathematique 30411C Physique 51411 Chimie 52411 1 elective: Group 1, 2 or 4	Français 10411 Mathematique 30331C Mathematique 30411C 3 electives: Group 1 (Physics Recommended)	Français 10411 Mathematique 30331C Mathematique 30411C 2 electives: Group 1 1 elective: Group 1,2 or 3
Prince Edward Island	English 621 Math 621B 1 of Biology 621, Physics 621, or Chemistry 621 1 elective: Group 1 1 elective: Group 1 or 2 (min 60%)	English 621 Mathematics 621A or 621B 1 of: Biology 621, Chemistry 621, or Physics 621 2 electives: Group 1 1 elective: Group 1,2,3 or 5	English 621 Math 621B Physics 621 Chemistry 621 1 elective: Group 1, 2 or 4	English 621 Math 621B Physics 621 Chemistry 621 1 elective: Group 1,2 or 4	English 621 Math 621B 3 electives: Group 1 (Physics Recommended)	English 621 Math 621B 2 electives: Group 1 1 elective: Group 1, 2 or 3
Nova Scotia	English 12 Pre-Calculus 12 1 of Biology 12, Physics 12 or Chemistry 12 1 elective: Group 1 1 elective: Group 1 or 2	English 12 Mathematics 12 1 of: Biology 12, Physics , or Chemistry 12 2 electives: Group 1 1 elective: Group 1,2, 3 or 5	English 12 Pre-Calculus 12 Physics 12 Chemistry 12 1 elective: Group 1,2 or 4	English 12 Pre-Calculus 12 Physics 12 Chemistry 12 1 elective: Group 1 , 2 or 4	English 12 Pre-Calculus 12 3 electives: Group 1 (Physics Recommended)	English 12 Pre-Calculus 12 2 electives: Group 1 1 elective: Group 1, 2 or 3
Newfoundland and Labrador	English 3201 Math 3200 1 of Biology 3201, Physics 3204 or Chemistry 3202 1 elective: Group 1 1 elective: Group 1 or 2	English 3201 Math 3200 1 of: Biology 12, Physics 12, or Chemistry 12 2 electives: Group 1 1 elective: Group 1, 2, 3 or 5	English 3201 Math 3200 Physics 3204 Chemistry 3202 1 elective: Group 1, 2 or 4	English 3201 Math 3200 Physics 3204 Chemistry 3202 1 elective: Group 1, 2 or 4	English 3201 Math 3200 3 electives: Group 1 (Physics Recommended)	English 3201 Math 3200 2 electives: Group 1 2 elective: Group 1m 2 or 3
Quebec (Secondary School Diploma)	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 1 of: Biology 534, Physics 534 or Chemistry 534 1 elective: Group 1 1 elective: Group 1 or 2	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 1 of: Biology 534, Chmistry 534 or Physics 534 2 electives: Group 1	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Physics 534 Chemistry 534 1 elective: Group 1,2 or 4	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) Physics 534 Chemistry 534 1 elective: Group 1,2 or 4	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 3 electives: Group 1 (Physics Recommended)	English 516 Math 506, CEGEP Math 201-015-50 - Algebra and Trigonometry- Secondary V TS/SN, or MAT 5101-5111 (Adult education) 2 electives: Group 1 1 elective: Group 1, 2 or 3

		1 elective: Group 1,2,3 or 5				
Ontario	English 4U Math MHF4U 1 of Biology SBI4U, Physics SPH4U or Chemistry SCH4U 1 of Biology 534, Physics 534 or Chemistry 534 1 elective: Group 1 1 elective: Group 1 or 2. See Note #13	English 4U Math MCV4U or MHF4U 1 of: Biology SBI4U, Chemistry SCH4U or Physics SPH4U 2 electives: Group 1 1 elective: Group 1,2, 3 or 5. See Note#13	English 4U Math MHF4U Chemistry SCH4U Physics SPH4U 1 elective: Group 1m, 2 or 4. See Norte #13	English 4U Math MHF4U Chemistry SCH4U Physics SPH4U 1 elective: Group 1, 2 or 4. See Note #13	English 4U Math MHF4U 3 electives: Group 1 (Physics Recommended)	English 4U Math MHF4U 2 elective: Group 1 1 elective: Group 1,2 or 3
MB, SK, AB, BC, NT, NU, YK See note #20	English 12 Pre-Calculus Math 12 1 of Biology 12, Physics 12 or Chemistry 12 1 elective: Group 1 1 elective: Group 1 or 2	English 12 Pre-Calculus 11 or Math 12 1 of: Biology 12, Chemistry 12, or Physics 12 2 electives: Group 1 1 elective: Group 1,2,3 or 5	English 12 Pre-Calculus Math 12 Physics 12 Chemistry 12 1 elective: Group 1, 2 or 4	English 12 Pre-Calculus Math 12 Chemistry 12 Physics 12 1 elective Group: 1, 2 or 4	English 12 Pre-Calculus Math 12 3 electives: Group 1 (Physics Recommended) See Note #13	English 12 Pre-Calculus Math 12 2 electives: Group 1 1 elective: Group 1,2 or 3
United States See Note #16	English 12 Math 12 (including Pre-Calculus 12) 1 of Biology 12, Physics 12 or Chemistry 12 1 elective: Group 1 1 elective: Group 1 or 2	English 12 Math 12 1 of: Biology 12, Chemistry 12, or Physics 12 2 electives: Group 1 1 elective: Group 1,2,3 or 5	English 12 Math 12 (including Pre-Calculus) Physics 12 Chemistry 12 1 elective: Group 1, 2 or 4	English 12 Math 12 (including Pre-Calculus) Physics 12 Chemistry 12 1 elective: Group 1, 2 or 4	English 12 Math (including Pre-Calculus) 3 electives: Group 1 (Physics Recommended)	English 12 Math 12 (including Pre-Calculus) 2 electives: Group 1 1 elective: Group 1, 2 or 3

NOTES TO ADMISSION CHART

1. A pass at the high school level is required for each subject counted for admission (unless otherwise specified).
2. To count for admission a subject must be taken at the Grade 12 "academic" level (N.B. Level 2) unless otherwise specified; level 1, French Immersion, and advanced courses are satisfactory substitutes (where they exist). Courses taken at the "general" or "open" levels will not be accepted for admission purposes.
3. Students intending to enter the Science program (BSc), the following concurrent programs - BA/BSc, BCS/BSc; the Bachelor of Medical Laboratory Science program (BMLS), the Bachelor of Arts and Sciences program (BASc), the Engineering programs (BScE), and the Bachelor of Computer Science/Engineering concurrent program (BCS/BScE) should note that two years each of high school sciences (as indicated) will normally be required.
4. Students whose first language is French may offer senior French in place of English to fulfill the English admission requirement and may then offer English as a Group 1 elective.
5. Meeting the minimum admission requirement does not guarantee admission to a UNB program.
6. The faculties of Arts and Science and Computer Science (Fredericton), offer a number of combined programs. These faculties offer a concurrent BA/BSc program (5 years of study leading to both a BA and a BSc degree) and a BASc (4 years of study leading to a Bachelor of Arts and Science degree). See Admission Chart for admission requirements to these programs.
7. The Faculty of Arts (Fredericton) offers the Bachelor of Applied Arts (Craft and Design) (BAA). This degree program is design for students who wish to combine practical work in craft and design with elements of the Bachelor of Arts academic program. Students will complete two years at each of the University of New Brunswick and the New Brunswick College of Craft and Design. Students must also meet the admission requirements as listed in the Admissions chart. For further information, contact the Admissions Office.
8. The Faculty of Science offers a Bachelor of Medical Laboratory Science (BMLS). This program consists of courses offered at UNB (Fredericton and Saint John) and at the New Brunswick Community College. Admission requirements are the same as for the BSc program.
9. A concurrent program in Arts and Computer Science is available on the Fredericton campus in which both a Bachelor of Arts and a Bachelor of Computer Science degree can be completed in 5 years.
10. A concurrent program in Computer Science and Science (BSC/BSc) is available on the Fredericton campus in which both a Bachelor of Computer Science and a Bachelor of Science degree can be completed in 5 years. Admission requirements are the same as the BSc program, with the additional qualification of a mark of 65% or higher in senior - year Mathematics.
11. Students who do not meet the admission requirements for direct entry to the Bachelor of Science degree program, but offer a minimum admission average of 70% may be given conditional admission into an entrance program to the extent that capacity allows. Students presenting only Chemistry will be considered at the discretion of the Faculty. Students who do not meet the admission requirements for direct entry to the Bachelor of Science in Forestry degree program, but have a minimum admission average of 60% (and other conditions as may be required by the admitting faculty) may be given conditional admission to the appropriate faculty in an entrance program. Applicants to the Bachelor of Science in Engineering Program with Grade 12 English, Math and only one of Chemistry or Physics will be considered for admission into an entrance program at the discretion of the faculty, and are encouraged to apply.
12. Students intending to enrol in Math 1003/1002, Introduction to Calculus I and MATH 1001, Calculus for Life Sciences, may take a Math Placement Test which will be administered during Orientation week in September. Materials to prepare for this test are available on the web at http://www.math.unb.ca/ready as well as from the Mathematics Departments in New Brunswick High Schools and UNB. Based on their test scores, and the regulations set out by the Mathematics Department, students may be required to take a Pre-Calculus course (Math 0863 UNBF or Math 1863 UNBSJ) or a special section of Math 1003 that covers the material of the course over two semesters, or a regular (one semester) section of Math 1003.
13. (1). Ontario applicants may present Math MCB4U and Math MGA4U wherever Math MCV4U and MHF4U are required.
(2). Ontario applicants presenting 3A and 4A courses from the old curriculum should contact the Registrar's Office for clarification regarding specific program requirements.
14. Science 122 is an approved Group 1 elective but it will not be accepted as a substitute for Chemistry 122 or Physics 122 for admission to programs requiring either of these courses.
15. New Brunswick students should present the following Mathematics courses:
(a) For programs not requiring calculus (Nursing and Recreation and Sport Studies), UNB will require either Pre-Calculus 11 or Foundations 12. For programs requiring a calculus course (including Business Administration), UNB will require Pre-Calculus 12A and Pre-Calculus 12B. The grades earned in both courses will be used to determine the admission average.

16. FOR UNITED STATES APPLICANTS ONLY if you are applying from the U.S., you must submit a high school transcript, Guidance Counselor's or Principal's report, and your SAT 1 or ACT scores. You must offer a grade of "B" in courses used for admission, a B-average or better, a rank in the upper half of your class, and a combined SAT 1 score of 1100 on the critical reading and math components (higher standards required in restricted enrolment programs). On the new SAT Writing component, we require scores in the range of 500-600 for Writing, 55-60 for Multiple Choice, and 7.5-8.5 for Essay.
17. Information about admission to the Faculty of Education, Faculty of Law, Bachelor of Integrated Studies, Bachelor of Applied Management, Bachelor of Applied Management in Accounting, Bachelor of Applied Management in Electronic Commerce, Bachelor of Applied Management in Hospitality and Tourism, and the Bachelor of Health Sciences programs are in appropriate sections of the Calendar. Please consult the Table of contents for page numbers.
18. The Faculty of Engineering is committed to fostering diversity – including gender, racial, and ethnic diversity – in its programs. The Faculty welcomes and encourages applications from all qualified individuals.
19. Applicants who are missing the pre-calculus requirement for direct entry to the Bachelor of Business Administration degree program but offer a minimum admission average of 75% may be given conditional admission to the program with the stipulation that they successfully complete MATH 0863 (or equivalent) with a grade of C or higher during their first year. Students who do not complete MATH 0863 by the end of their first year may be required to withdraw from the Bachelor of Business program.
20. Applicants from British Columbia may use English First Peoples 12 to meet English 12 requirement and may present Anatomy and Physiology 12 instead of Biology 12 where applicable.

New Brunswick Courses shown below; equivalent courses from other provinces and the United States will be accepted.

NOTE: Ontario courses HRT3M is an approved elective; HRE4M is not. SES4U, SNC4M, HSE4M, TPJ4M and PSE4U are approved electives.

GROUP ONE	GROUP TWO	GROUP THREE	GROUP FOUR	GROUP FIVE
Anglais 22411	Intro to Accounting 120	Advanced Interdisciplinary Studies (for admission to Renaissance College only)	Computer Aided Drafting 120	Health & Physical Education 120
Astronomie 55411		Art 110/120		
Biologie 53411/53421	Accounting 120 (computerized)	Art 91411	Dessin Industrial 67311	Ed Physique 71411
Biology 122	Business Organization & Management 120	Creation Musicale 92421	Electricité 61311	Exercise Science 120
Calculus 120	Comptabilité 84411	Communication 120 (Media Studies 120)	Introduction to Electronics 110	Introduction to Kinesiology 120
Canadian Literature 120	Marketing 122	Étude des Medias 11411	Micro Electronics 120	Leadership 71421
Chemistry 122	Native Studies 120	F1 Techniques in Fine Arts110	Robotics & Technology 120	Nutrition for Healthy Living 120
Chimie 52411		F1 Techniques in Communication 120		SC Active Physic 72411
Computer Science 110/120		Music 111/112/122		
Co-op Education 120		Musique 92411		
Droit 86411		Theatre Arts 120 (Drama 120)		
Economics 120		Theatre 93411		
Economie 44411				
Education Cooperative 88411				
Entrepreneuriate 83411				
Environmental Science 122				
Espagnol 23411				
Essential Skills Pathway Program (Captstone)				
FILA 120				
Foundations of Mathematics 120				
Français 10421				
French 122				
Geographie du Monde 41411				
Geography 110/120				
Geology 120				
History 112/122				
Histoire 42311/42411				
Intro. Sc. Informatique 87411				
Info. Appli. 81311/81911				
Institutions Politiques, Economiques et Jurdiques 43411				
Introductory Mi'kmaw Language 110				
Introductory Wolastoqey Latuwewakon 100				
Journalism 120				
Latin 120				
Law 120				
Mandarin 120				
Marine Biology 120				
Mathematique 30411C/30421C				
Oceanography 120				
Peuple Wabanaki 48411A				
Physics 122				

Physique 51411/51421			
Political Science 120			
Popular Music 120			
Pre-Calculus 110			
Pre-Calculus A 120			
Pre-Calculus B 120			
Psychologie L03AC			
Psychology 120			
Reading Tutor 120			
Science 122			
Science de l'Environnement 54411			
Sociology 120			
Spanish 120			
Stats 120			
World Issues 120			
Writing 110			

Admission Regulations for the Academic Year 2022-2023

A. General Information

1. Admission inquiries can be directed to the appropriate campus Registrar's Office: phone (506) 453-4865, admissions@unb.ca, Fredericton International Admission inquiries can be directed to (506) 458-7386, int-admissions@unb.ca. Saint John Admission inquiries can be directed to unbsjreg@unb.ca.
   Applicants are encouraged to consult UNB's website for up to date developments, including how to apply online at http://www.unb.ca/admissions/undergraduate/.

2. A student applying for entrance to the University of New Brunswick (UNB) must submit an online application form including the non-refundable $65 application processing fee for domestic applicants and $125 for International applicants. A **non-refundable tuition deposit** is required from all applicants after they have been accepted.
   Tuition deposits amounts are as follows:
   All programs (unless otherwise stated): $100 non-refundable admissions deposit.
   Bachelor of Nursing (Fredericton and Saint John), LPN to BN Pathway, and LPN Bridging Program: $250.00 non-refundable admissions deposit
   Bachelor of Education (Fredericton): $300.00 non-refundable admissions deposit.

3. The final date for application, including required supporting documentation, for the 2021-2022 session:
   General deadline, all programs (unless otherwise stated) – March 31
   BEd (School Years), B.Ed in Early Childhood Education, Fredericton – December 15 application deadline
   BA/BEd, Saint John – January 31 deadline
   BN (Fredericton & Saint John), BNPATH & LPNBR – February 15 deadline
   BHS, Saint John – February 15 deadline
   BPhil, Fredericton – February 15 deadline

   Applications received after that date may be considered, provided that space is available, but late applicants are cautioned that their applications will not be processed until the earlier applications are assessed, and that they may not necessarily be accepted into their program of primary choice. This application deadline does not apply to applications for Graduate Studies. It is recommended that applications for their programs with enrolment limits, be submitted early.

4. **Meeting the minimum admission requirements does not guarantee admission to any program.**

5. Applicants who wish to be considered for entrance scholarships need to complete the general online scholarship application (http://www.unb.ca/scholarships/highschool/index.html) by March 1.

6. Given the lead time required for visa processing, international students are encouraged to apply early. Offers of admission can be made throughout the year, until such time as programs are declared closed.

7. Students will normally follow the regulations in the Calendar for the year of their admission.

8. The University reserves the right to refuse admission.

B. Non Public-Schooled Applicants

Applicants in this category may have been home-schooled or may have attended a private school that does not follow a regular provincial curriculum. These applicants must provide the following:

1. A complete online Admission Application form with the non-refundable application processing fee.

2. A letter identifying the applicant's "non-public-schooled" status, and if possible, a transcript detailing grade 11 and grade 12 courses. Course outlines, syllabi, evaluation and criteria, and a list of resource materials should be provided for each course.

3. Evidence of a minimum score of 1100 in the SAT 1

   For programs requiring specific grades in particular courses, evidence of achievement can be provided as follows:

   a. Complete SAT 2 test in required courses and achieve a minimum of 550 out of 800, or

   b. Complete the Grade 12 Adult High School Certification Provincial exam for that subject and achieve the grade specified in the program *Prerequisites* (e.g. a minimum grade of 60% is required in English 122 for admission to the Faculty of Arts), or

   c. Achieve a minimum grade of 4 in an approved Advanced Placement (AP) course.

4. Submit evidence of achievement as outlined above having official documents (transcripts/statements of results) sent directly from the testing agency to the Admissions Office. Documents will not be accepted directly from applicants.

C. Mature Applicants

1. Canadian citizens and permanent residents who do not meet the usual entrance requirements and who are 21 years of age or older by the session for which acceptance is sought may be considered for admission. In addition to the documentation normally requested, such applicants are encouraged to submit a letter indicating why they feel they are likely to profit from a university education.

2. Normally admission to an undergraduate program will be assessed after a mature applicant has completed UNB courses on a part-time basis approved for the purpose; high school graduates, adult high school diploma recipients, and holders of high school equivalency certificates (GED) may be exempted from this requirement. Since some Faculties specifically require certain courses in Mathematics and Science, qualifying course work may also be required; proof of successful completion in the specified course, as offered by the N.B. Department of Post-Secondary Education & Training and/or the NBCC network, is acceptable. All applicants should consult the Registrar's Office before registering.

3. Applicants who have attended another college or university but who have been away from formal education for a minimum of five years may make application under this regulation. However, clear evidence of ability to handle university-level studies, or of extenuating circumstances, will be required. In select cases, qualifying course work may not be required.

D. Academic Probation for Transfer Students

1. When students transferring from another Faculty, University, or post-secondary institution are admitted on Academic Probation, that placement on Academic Probation will be considered to be the one allowable placement under these regulations.

E. Admission from Community College

Graduates from Community College Programs and students who have successfully completed study in community college programs should request that official transcripts of their work be forwarded to the Registrar's Office.

1. Such transcripts will be considered for transfer credit provided:
   a. The courses being considered for credit satisfy the program requirements at the University of New Brunswick.
   b. The courses being considered meet the standard of grade required within the program at the University of New Brunswick.

F. Admission with Advanced Standing

1. The University of New Brunswick welcomes and encourages applications from International Baccalaurate. UNB offers transfer credits for select successfully completed Higher Level courses with a minimum grade of 5, 6 or 7 for IB courses. Minimum grade requirements may vary by subject.

2. Credit may be given for appropriate courses if an applicant has completed at least one full year of CEGEP. Normally, a minimum mark of 65% will be required in each subject for which credit is sought.

3. Applicants from overseas who already possess entrance requirements as stated on GCE 'O' level or its equivalent may be considered for transfer credit, for appropriate courses in the program they propose to enter, on the basis of GCE 'A' level passes with at least a minimum grade of 'C'.

4. Applicants that have written AP exams may be eligible for advance credit. Minimum grade requirements and specific transfer courses will depend upon the particular AP course and program applied for. Applicants should have official results forwarded to the Admissions Office for assessment.

5. An admitted applicant who has taken recognized OAC credits may be considered for transfer credit in appropriate courses. Normally a mark of 65% will be required in each subject for which credit is sought. In some subjects a higher grade may be required.

6. The maximum amount of transfer credit which may be allowed will not be more than the normal number of credit hours in first year of the program to which the student is admitted.

G. International Applicants

1. For applicants from Great Britain and countries with GCE equivalent examinations, GCE "O" level at "B" or grade three level in English, and five academic options is required.

25

2. Applicants from other countries should consult the UNB web http://www.unb.ca/prospective/international/ page for detailed admission requirements that can differ between countries.

3. International students and permanent residents whose native language is not English must submit the results of an English language proficiency test: TOEFL, MELAB IELTS, CAEL and Pearson Vue Test, Cambridge English Assessment and the Duolingo Test of English Language or other approved proof of English Language proficiency as outlined at: https://www.unb.ca/international/admission/english.html have been approved for this purpose. This requirement may be waived in cases where the applicant has been in Canada for three or more years. In all cases, the University reserves the right to require proof of language proficiency before permission will be granted to register in academic courses.

4. Academically admissible applicants, who are unable to provide the required English proficiency score for direct admission, may be conditionally accepted to most degree programs. Applicants will be tested upon arrival to UNB. For further information, please visit: http://www.unb.ca/prospective/international/.

H. Applicants from the United States of America or from High Schools Using American - Based High School Curriculum

1. Applicants from Grade 12 of an accredited American-based high school curriculum must offer a rigorous program of required university preparatory courses and receive a favorable recommendation from a high school official. Criteria such as academic standing, rank in class, and SAT score may also be used to determine a candidate's admissibility.

I. Bachelor of Education Program

Admission is granted in consultation with the Faculty of Education. The number of places available in the program are limited and admission is competitive. As not all recognized teachable subject areas are possible for study at UNB, applicants are encouraged to verify with the Faculty prior to application.

Criteria for Admission

Minimum requirement for admission to the Bachelor of Education Degree Program is the successful completion of an undergraduate degree with teachable subjects from a recognized university, college or other post-secondary institution. A minimum cumulative grade point average (CGPA) of 2.7 is required.

To be admitted to the BEd Elementary Program, applicants must have completed at least 30 credit hours (10 term courses) in teachable subjects. Choose a minimum of three credit hours of course work from the first category (English) listed below and the remaining 27 credit hours from at least four different categories (Items 1 through 8 below).

1. English
2. Science and Technology (biology, chemistry, physics, general science, environmental science, or computer science)
3. Humanities (history, geography, political science)
4. Mathematics (algebra, calculus, geometry)
5. Languages
6. The Arts (music, visual arts, drama, theatre, creative writing)
7. Physical and health education
8. Social Science (anthropology, psychology, sociology)

In addition to the above, applicants must complete an application package that includes:

1. List of activities relevant to teaching
2. Brief responses to how education related experiences and previous academic experience has prepared them for teaching (300 word max each)
3. Two goals while in the program (300 word max)
4. Three references
5. Individual interview for applicants meeting minimum admission requirements

Secondary Program

Applicants must have completed an undergraduate degree with a minimum cumulative grade point average of 2.7. Students must have completed at least 30 credit hours (10 term courses) in the first teachable area and 18 credit hours (6 term courses) in the second teachable area or they must have completed at least 24 credit hours (8 term courses) in each of two teachable areas. All applicants must have completed at least one term English course.

In addition to the above, applicants must complete an application package that includes:
1. List of activities relevant to teaching

2. Brief responses to how education related experiences and previous academic experience has prepared them for teaching (300 word max each)
3. Two goals while in the program (300 word max)
4. Three references
5. Individual interview for applicants meeting minimum admission requirements

Selection of the applicants for the after-degrees program is competitive, so meeting the minimum requirements does not guarantee admission to the program.

Significant weight will be given to the academic record. Consideration will also be given to the applicant`s suitability for, and interest in, education.

Required Documentation

The following documents will be submitted by December 15th prior to the beginning of the academic year for which the applicant is seeking admission:
1. Application form, and education supplementary forms which include evidence of experience and education indicating a suitability for and an interest in education, and a personal statement of intent and purpose.
2. Official transcript(s) of academic record to date, other than University of New Brunswick transcripts. Applicants must arrange for an official transcript at each university, college, or other post-secondary institution attended to be sent directly to the Admissions Office by the academic records department of the institution. Applicants must also arrange for an official transcript of all grades received after the time of application to be sent directly to the Admissions Office as soon as it becomes available. The Admissions Office cannot accept the applicant's copy of any transcript.
3. Three references (academic, character and educational), submitted directly to the Admissions Office by persons able to comment on matters relevant to the criteria for admission.

The faculty will conduct individual interviews for applicants meeting minimum admission requirements.

Bachelor of Education in Early Childhood Education

Applicants will be required to hold a two year post-secondary education diploma in early childhood education from a recognized community college or learning institution with a minimum GPA of 2.7. Acceptable two-year diploma programs will allow eligible students to gain direct access to the online degree program at UNB.

In addition to the above, applicants must complete the UNB online application and submit the following supplemental items:

1. A Statement of Interest
2. A C.V.
3. 2 References (academic and character)
4. Individual interview for applicants meeting minimum admission requirements may be required.

J. Faculty of Education Admission Advantage - FEAA. *Fredericton Campus Only*

For high school applicants and applicants currently in a first year UNB degree program.

The Faculty of Education Admission Advantage extends conditional offers of acceptance into the Bachelor of Education program to exceptional high school students and first year UNB students. Faculty of Education Admission Advantage students apply to the Bachelor of Education program as well as the University of New Brunswick undergraduate program of their choice during the final year of secondary school, or apply to the Bachelor of Education program during the first year of their UNB program.

Faculty of Education Admission Advantage status has the following benefits:
1. A place in the Bachelor of Education program, conditional upon meeting process requirements.
2. A Faculty of Education counselor to assist you with questions or concerns.
3. Access to the Education Society to keep you informed about events, activities, and other involvements that could enhance your admissibility to the education degree program.

If you are currently in, or approaching your senior year of high school, OR are in the first year of study at UNB, you will want to see the details in the Undergraduate Calendar online. For this route, you are conditionally admitted to the Bachelor of Education degree and must complete your first degree at the University of New Brunswick.

Secondary school students should complete the following steps:

1. Apply to an undergraduate program at UNB, and indicate interest in FEAA by the application deadline of March 31st.
2. Complete and return the Faculty of Education advance application package by March 31st.

The application for the Faculty of Education Admission Advantage requires that the high school applicant presents all courses necessary for admission to their first program choice (e.g. Bachelor of Arts) with an admission average of 80%.

First year UNB students should complete the following steps:

1. Complete the Faculty of Education advance application by March 31st.
The competitive application for the Faculty of Education Admission Advantage requires that the UNB applicant completes a minimum of 30 credit hours in the first year of study and achieves a grade point average of 3.3.
Selection of applicants for the FEAA is competitive, so meeting the minimum requirements does not guarantee admission to the program.

Progress Criteria
To progress into the Bachelor of Education program, Faculty of Education Admission Advantage students need to:
1. Achieve a cumulative grade point average of 3.0 upon completion of their UNB degree (degree must be completed within a five-year period).
2. Participate in a Faculty of Education Seminar Series designed for FEAA students while in undergraduate degree program.
3. Participate in leadership/achievement activities involving working with children, athletics, performing arts, student government, volunteer work, and community services. These activities will be reported annually to the Faculty of Education.
4. Complete final component of Faculty of Education application.

A place in the Faculty of Education will be assured to those students who are awarded Faculty of Education Admission Advantage, provided they meet the progress criteria listed above upon graduation from their first UNB degree program.
NOTE: If you have questions about this program, please call Dr. Katherine Winslow, Faculty of Education, (506) 447-3048 or e-mail at winslow@unb.ca.
Copies of the FEAA application package can be obtained by e-mailing Admissions@unb.ca.

K. Faculty of Education BA/BEd (Early Year) Concurrent Program.

Saint John Campus Only
Students who wish to become elementary school teachers (grades K-5) may complete both their BA and BEd degrees concurrently on the Saint John Campus of UNB. In order to participate in the concurrent BA/BEd program, students must first apply and be admitted into the BA degree program. Within the BA/BEd in early education students may study any major program of their choice. After successful completion of at least one year of the BA degree, students may apply to enter the Concurrent BA/BEd. If successful, students proceed to take courses in both degree programs over a four year period. After a minimum of five years in total, it is possible to graduate with both degrees. Applicants will be required to provide a written statement outlining personal goals, as well as maintain a B- average (2.7 CGPA). Applicants must also provide two character references. Applicants who meet these criteria and meet the application deadline may be interviewed.

L. Bachelor of Philosophy Offered by Renaissance College

In order to meet learning objectives and to provide the planned experiential learning and mentorship components, the program will have a limited enrollment.

Criteria for Admissions
1. High School applicants must meet admission requirements as specified in the chart of First Year Required Academic Subjects and accompanying notes found in Section B of the UNB Academic Calendar.
2. The UNB regulations applicable to transfer students and mature students are outlined in Section B of the UNB Academic Calendar. Normally, a minimum assessment grade point average of 3.0 (or equivalent) is required for a student to be considered for transfer to Renaissance College.
3. All applicants must also submit to the Admissions Office a resume which clearly and concisely outlines the applicant's educational and career goals, volunteer activities, prior learning experiences, diversity of background, and skills (such as but not limited to: artistic, musical, athletic, cultural, linguistic), and leadership experience. Typically, this information can be communicated well in two or three pages. No specific forms or formats are required.
4. Transfer credit toward required RCLP courses will be given on the basis of evidence provided by the student for demonstrated competence in the learning outcomes associated with each Renaissance College course.

Admissions Committee
An Admissions Committee of faculty members, in cooperation with the UNB Admissions Office, will review the applications. In admitting students, the Admissions Committee will strive to assemble a diverse cohort of highly capable learners and match the student to the program by determining what the College can contribute to the individual, what the individual can contribute to the College, and what the individuals can contribute to each other.

M. Bachelor of Integrated Studies

Criteria for Admission
Normally, applicants to the Bachelor of Integrated Studies program without a prior degree must meet the following requirements:

- Minimum of 25 years of age.
- Complete an interview with the Bachelor of Integrated Studies program advisor to asses their suitability for the program.
- Have completed a minimum of 30 credit hours or transferable credit (or the equivalent through prior learning assessment) of post-secondary study.

Potential applicants with a degree should refer to existing regulations in the UNB Calendar regarding second degrees and should consult the BIS coordinator.

Other Special Requirements
Personal Learning Portfolio:
As part of the application process, the applicant will begin development of a personal learning portfolio that will be used as the basis for the assessment of prior learning. The portfolio will continue to be developed throughout the course of study through a Renaissance College portfolio course and will be submitted as a graduation requirement for the program. The BIS portfolio documents formative understanding of how and to what degree students achieve the learning outcomes. It is a "meta-analysis" where students engage in a reflective critique that, when written, conveys development and competency in each of the BIS outcomes. Examples from experiences that were not part of BIS courses or other academic courses such as workplace or community activities should also be included where appropriate. The portfolio is not merely a list of "things done," but things done and how the student has grown and developed as a result.

N. Certificate of Proficiency in French

Successful completion of New Brunswick Grade XII French, or the equivalent, is the minimum requirement for admission. Appropriate oral and/or written tests may be given to place students at the proper level.

O. New Brunswick Youth Apprenticeship Program
The following action has been approved for this group of applicants:

1. The University of New Brunswick guarantees successful New Brunswick Youth Apprenticeship students access to relevant undergraduate programs, which are accessible directly from high school, provided all minimum requirements for admission are met and enrollments are not limited;
2. An application deadline of 15 February has been created for such applicants and where it appears that the level of interest shown by student apprentices exceeds 5% of anticipated enrollment, a competition will be established to stay within this target;
3. Such applicants are required to submit a Youth Apprenticeship Program progress report in addition to the normal admission documentation to provide verification of participation and to provide background information should the need arise to open a competition;
4. Such students may be referred to the Challenge for Credit regulations in the event that they have acquired, by the work experience and occupational training within the Apprenticeship Program, a high level of competence in certain areas closely related to UNB courses.

P. Re-Admissions
1. Students who have been absent from study for a period of at least 12 consecutive months since their last attendance are required to seek re-admission. Students re-admitted to the original or another program of study following an absence from study, or re-admitted since being required to withdraw, will normally follow the calendar for the year study resumes. Individual faculties may have established additional conditions. Students should refer below for further information concerning re-admission since being required to withdraw.
2. Students who have been required to withdraw from this university or any other university or college will not be accepted, under any circumstances, in the following academic year. Such students may

be considered for readmission or admission after they have spent some time (at least 12 months) away from university and can provide a satisfactory personal letter outlining why they feel they will now be successful as well as a satisfactory letter of recommendation from employers and/or others. The admitting faculty or the Admissions Committee may require evidence, such as successful completion of designated courses, that applicants are likely to be successful in further studies.

3. A student readmitted since being required to withdraw from this university or any other university, will automatically be on academic probation. Failure to meet the normal academic regulations at the next time of assessment will result in final dismissal from the program. Further applications for readmission to the program will not be considered.

Q. Admission to a Second Undergraduate Bachelor Degree

Graduates of UNB may apply for admission to, and follow a program towards a second different undergraduate bachelor degree and in limited cases a second same undergraduate bachelor degree. See Calendar regulation VII, *Requirements for a Second Undergraduate Bachelor Degree*.

R. Application Fraud or Misconduct

1. Undergraduate students who at the time of application fail to provide required information regarding attendance at another post-secondary institution will normally be required to withdraw from the University for a period of at least twelve months. Where a student is required to withdraw,
   a. Work taken during the period after the failure to disclose will be considered for credit only if the student is readmitted and after consultation with the Faculty concerned; and
   b. The notation "Required to Withdraw" will be a permanent statement on the student's transcript of record.

2. Where the Registrar has reason to believe that a student failed at the time of application to disclose attendance at another post-secondary institution as required, the Registrar, where possible, shall discuss the matter with the student. Where the Registrar determines that the student failed to disclose such information as required, the Registrar shall impose such penalty as considered appropriate in the circumstances. By registered mail, the Registrar shall:
   a. Notify the student of the decision and penalty imposed;
   b. Provide the student with the basis and reasons for the decision
   c. Advise the student of the right to appeal to the appropriate Senate Admissions Committee; and
   d. In the event of an appeal, request that the student submit a written statement regarding the case within three weeks, and encourage the student to be present when the case is heard.

3. The regulations with respect to a student's right to appeal on an academic matter shall apply with any necessary modifications to a case referred to the Committee involving a failure to disclose attendance at another post-secondary institution.

S. Transfer Students
University of New Brunswick Students
University of New Brunswick students wishing to transfer to another degree program must complete an Internal Transfer Request form (Fredericton) or an Academic Program Transfer form (Saint John), preferably before March 31st. (January 31st for FEAA applicants). Applications received after that date will be considered, provided that space is available. It is recommended that transfer applications for degree programs requiring special forms, i.e. Nursing and Kinesiology, be submitted in January. The record to date will be assessed by the Registrar in consultation with the administrative head of the degree program concerned. If the transfer is accepted, a statement of the student's position in the new program, including the credit hours permitted towards the new degree program, will be made.
Students wishing to transfer to another degree program for a winter term (beginning in January of the academic year) must complete a Transfer Request form before November 15th.
Students will normally be required to have completed at least one full year of academic work before applying to transfer.

Students from other Universities or Post Secondary Institutions
A student wishing to transfer from a recognized university or college to UNB will be considered for admission subject to the following University of New Brunswick regulations:

1. Students should apply online at unb.ca/apply by March 31st. Applications received after that date will be considered, provided that space is available.

2. Students who for academic reasons are not eligible for readmission to the university at which they last registered will not be admitted to UNB.

3. A transfer student eligible to continue at the university last attended will be considered on the same basis as UNB students. **NOTE**: The Faculty of Law is excluded from these regulations.

4. Courses for which credit has been awarded at the transferring institution will be accepted provided that:
   a. The courses being considered for credit satisfy the program requirements at the University of New Brunswick.
   b. The courses being considered meet the standard of grade required within the program at the University of New Brunswick.

5. Official records will be evaluated and notification will be forwarded from the Registrar's Office concerning the student's position in the program at the University of New Brunswick, including the number of transfer credits awarded.

   Applications for transfer to UNB must be submitted to the Admissions Office. They will be reviewed by the Dean of the Faculty concerned who, together with appropriate University authorities, will determine the position of the applicant.

   In Faculties where the credit system is used, at least half the credits for a degree, diploma or certificate must be taken at this University; in Faculties where the year-system is used, two years must be taken at this University.

   It is normally expected that the final year of study be completed at this University.

6. A student accepted as a transfer student from another Universities Canada post-secondary institution may be given credit hours towards a degree for acceptable previous courses, but the cumulative grade point average, will be based only on courses taken at this University (i.e. those listed in the UNB Undergraduate Calendar, including certain approved St. Thomas University courses).

7. Students who transfer from another post-secondary institution to a Concurrent Degree program at UNB must complete at least half the total credit hours for that concurrent program and at least half of the credit hours normally required for each included program at this University.

8. Current University regulations governing the number of credits that must be taken at the University of New Brunswick apply.

9. From time to time and in special circumstances, Faculties may recommend that credits in addition to the normal 50 per cent of the degree program be transferred. Such recommendation will be considered by the Registrar. In situations where approval is denied, and at the request of the Faculty, the matter will be referred to the Senate Admissions Committee for resolution.

T. Challenge for Credit
A significant number of students are entering university having acquired, by work experience and/or forms of study other than attendance at university, a high level of competence in certain areas closely related to courses offered at this University. The Challenge for Credit scheme makes it possible for the University to give recognition to such attainment. The regulations which follow provide a mechanism for Departments to offer Challenge for Credit examinations in courses which they consider appropriate.
Regulations
The Challenge for Credit scheme does not apply to the School of Graduate Studies, Faculty of Law, or the Faculty of Education.

1.
   a. Only students who have been admitted to a degree, diploma, or certificate program at the University of New Brunswick may challenge for credit.
   b. The result of Challenge examinations will be recorded subsequent to registration.

2. Normally, a request for challenge for credit will not be considered after one year from the date of the student's first registration in a degree, diploma, or certificate program at UNB.

3. A student may receive credit by Challenge only when registered in a formal degree, diploma, or certificate program, i.e. no credit for students in "no degree", "visiting", or "qualifying" programs.

4. A student shall not be allowed to challenge for credit more than once in any course.

5. No student may challenge for credit in a course for which the student has previously registered (including registration for an audit) either at UNB or any other university or equivalent institution.

6.
   a. The maximum credit which a student may obtain by challenge is whichever is the lesser of the 30 credit hours or 25% of the requirements of the program. (Please note certain Faculties may have a more restrictive policy.)
   b. Students must still complete at least 50% of the program at UNB excluding credits obtained by Challenge.

7. A student on "academic probation" or "required to withdraw" may not challenge for credit.

8. A student may not challenge for credit in a course of a lower level than one already attempted.

9. Courses challenged will be identified as such on the student's transcript and will be shown as "credit" (CR), or "No Credit" (NCR). A grade of 'C' must be obtained for credit to be allowed.

10. The challenge for credit will normally be in the form of a comprehensive examination. In some cases additional proof of expertise, such as evidence of laboratory experience, will be required.

11. The Department or faculty member concerned will determine the content and form of the challenge for credit examination.

12. Applications must be approved by the department concerned which should be satisfied that there is a responsible basis for requesting a challenge, such as previous work or educational experience.

13.
   a. Challenge for credit examinations will be held only on the campuses of the University of New Brunswick.
   b. Normally, challenge examinations will be held during the first week of lectures in the Fall Term or, in the case of a student admitted to start in January, during the first week of lectures in the second or Winter Term. Application to challenge for credit must be made 30 days in advance of these examination periods. At the discretion of the department concerned and with the agreement of the Registrar, this period may be shortened (e.g. if an examination paper suitable for challenge for credit is already available).

Applications must be accompanied by the appropriate fee in full (Section C.)

Application forms are available at the Registrar's Office.

U. Prior Learning Assessment

Prior Learning Assessment (PLA) refers to the systematic evaluation of learning which an individual has achieved through work, life, and educational experiences, and the relating of that learning to the expected learning outcomes of courses and programs in which the individual is enrolled at UNB for the purpose of granting credit where appropriate. PLA is not the granting of credit for experience but rather for learning. The validity of PLA is based on the recognition that learning takes place in a variety of settings and through a variety of experiences, and that students who bring university-level learning upon entrance to a UNB degree, diploma, or certificate program should receive credit for what they already know or can do, as assessed against the expected outcomes of that program.

If credit is approved, then a grade of "transfer credit" (TR) will be shown on the transcript of record.

Specific course/s for which credit has been approved through prior learning assessment will be identified as such on the student's record. Unassigned credit to be applied to the student's program will be identified as such on the student record.

Partial course credit as a result of prior learning assessment will not be shown on the student transcript of record. Such a result will form part of a student's computer record if possible in any student information system the University is using and will be held on file in the student's program Faculty and the Registrar's Office.

The result of a PLA evaluation will be recorded subsequent to registration.

For further information, please contact the Dean of your Faculty or the Director, PLA Services.

I. General Course Regulations

A. Class Attendance

1. Students are expected to attend all classes, laboratories, tutorials, or other class meetings officially designated for a particular course. They are expected, also, to complete all assignments. Departments, or individual instructors, may make specific requirements about attendance and class participation. An instructor may assign a final grade of F in the course to a student who fails to meet any one of these requirements, including failure to maintain the stipulated attendance policy. Such requirements must be communicated in writing to students within the first two weeks of the course (see item A (4) under III. Examination, Standing and Promotion). It is the responsibility of a student who is absent during the first two weeks to ascertain the requirements of the course.

2. Students are advised to check course restrictions to determine the policy in effect concerning class attendance during the first week of lectures. In some courses, for example, those with limited enrolment, failure to attend during the first week or to make arrangements with the instructor may result in the cancellation of the registration. Approval of the Departmental Chair, or the Dean in Faculties where there is no Chair, is required.

3. It is expected that most problems caused by a student's absence from classes, including absence from mid-term tests, can be resolved with the instructor concerned. If, through sickness or other unavoidable cause, the student is absent from classes, the student must advise the instructor immediately upon return to classes. The instructor may request suitable documentation if such confirmation is considered necessary. Health certificates will be accepted for consideration only from the health care professionals who attended the student during the period of absence.

B. Classroom, Lab, Clinical and Fieldwork Safety Decorum

Consistent with the General Regulations on Conduct as set out in the Undergraduate Calendar, faculty, staff, and students are entitled to a classroom, laboratory, clinical, practicum and fieldwork environment which affords respect and dignity to those in attendance, and is free from threats to personal safety, discrimination, harassment, intimidation and behaviour which is destructive, disruptive, disorderly and offensive. The instructor may enforce standards of decorum within the classroom, laboratory, clinical practicum or fieldwork setting which are consistent with these regulations and has authority to ensure that all health and safety policies are observed in these settings. The instructor is encouraged to refer students to the relevant regulations and policies, including this regulation.

Where a student engages in behaviour which is inconsistent with the General Regulations on Conduct or University health and safety policies, the instructor may take reasonable steps to deal with the situation including immediate removal of the student from the classroom, laboratory, clinical practicum or fieldwork setting. Should it prove necessary, the instructor may call Campus Security to assist with removing a student.

Following such removal, the instructor, in consultation with the Dean and Registrar, will determine whether further action should be taken, including the possible compulsory withdrawal of the student from the course, consideration of an academic offence, or disciplinary action pursuant to the General Regulations on Conduct. Any further action will be conducted in accordance with the normal procedural provisions under the applicable University regulation.

C. Adding Courses

Students have until the second Friday of Fall Term to add fall term or full year courses and the second Friday from the commencement of winter term for the addition of winter term courses. A student adding a course is responsible for ascertaining the requirements of the course and for completing them.

D. Dropping Courses

1. Students may drop term or full-year courses up to the second Friday following the commencement of classes in those courses and those courses will be deleted from the student's record.

2. Students may withdraw from term or full-year courses after the second Friday of classes in accordance with the regulations set out below.

    a. Students are entitled to make decisions to withdraw from courses after the second Friday of classes on an informed basis. An informed basis means that students shall have a reasonable opportunity to assess their progress in each course and to receive feedback on their performance in each course before making a decision. Students have the responsibility to seek information on which to make their decisions to withdraw.

    b. In courses where the final grade is based in part on term work such as, but not limited to, essays, reports, assignments, projects including group work, problem solving, tests including mid-term examinations, seminar presentations and/or participation, attendance, students are entitled to receive feedback on the portion of this work completed prior to the deadline for withdrawal from courses without academic penalty. Such feedback normally will include, but is not limited to, the instructor's evaluation of the student's work. Students also are entitled to consult with the course instructor and/or their advisor to obtain feedback on their performance in a course and are encouraged to do so before withdrawing from a course after the second Friday of classes.

3. After the second Friday of classes, students may withdraw from courses without academic penalty at any time up to and including the deadlines as set out in the Undergraduate Calendar of Academic Dates approved annually by the Senates. Students remain subject to Regulation VIII (Academic Offences) for course work submitted by the student prior to their request to withdraw.

4. The last date to withdraw without academic penalty from courses of duration shorter or longer than the usual one term or full-year period is the point where approximately two-thirds of the course time has elapsed.

5. Withdrawal from courses after the first ten (10) teaching days of classes and no later than the deadlines indicated in iv above will carry no academic penalty and will be shown as "W" on the transcript.

6. Withdrawal from courses after the deadlines indicated in iv above will be recorded as "WF" on the transcript and a grade of zero (0) will be carried into the calculation of the GPA.

    a. Notwithstanding the above, a student may petition the Chair, or in the case of Faculties without departments, the Dean or Dean's designate, of the Department/Faculty which offers the course, to withdraw from a course without academic penalty after the applicable deadline in iv and before the last date of classes for that course. No petition regarding withdrawal shall be considered after the submission of the final grade for the course.

    b. The grounds for this petition are restricted to:
        i. the student made reasonable efforts to obtain feedback on their performance in the course prior to deadline for withdrawal in iv, but was unable to do so;
        ii. compassionate, health-related or extenuating circumstances beyond the control of the student demonstrably had a direct impact on the academic performance of the student in the course.

    c. The student shall submit the petition in writing no later than the last date of classes in the course, explaining the grounds on which the petition is based. It is the student's responsibility to provide documentation in support of the petition which demonstrates the grounds cited. The Chair, Dean or Dean's designate, as the case may be, has the option, but is not required to meet with the student. It is expected that a decision on the petition will be made expeditiously.

    d. The Chair, Dean or Dean's designate, as the case may be, shall have the sole and only discretion to grant the petition, and, where satisfied that the student has established either grounds as set out in b), normally will grant the petition.

    e. Where the decision of the Chair, Dean or Dean's designate to grant the petition, the course in question will be shown as "W" on the transcript.

    f. The decision of the Chair, Dean or Dean's designate on the petition is final and not subject to appeal. However, students may have recourse to appeal to the relevant appeals committee on related matters as set out elsewhere in these regulations (see for example the section headed "Right of Appeal").

E. Repeating Courses

Students may without special permission register for a course already taken in order to meet a prerequisite or other degree requirement, or in order to improve their grade point average. However, both the original grade and the new grade will each be counted separately towards a grade point average. Students should note that while the credit hours of a repeated course will be used each time in calculating a grade point average and in the totals of courses attempted and passed, they can only

be counted once towards the minimum number of credit hours required for a degree.

A student may attempt a course a maximum of three times (including withdrawals but excluding course attempts designated with the # notation). Beyond that, the student must obtain the permission of the Dean of the student's Faculty to register again in the repeated course.

F. Permission to Study off Campus at Another University or Other Post-Secondary Institution

1. All transfer of credits from other universities or other post-secondary institutions must be approved by the Registrar. A student at UNB who wishes to take courses at another university for credit towards the degree program at UNB must obtain a letter of permission, in advance, from the Registrar at UNB. A letter of permission will not be granted to a student required to withdraw and normally will not be granted to a student on academic probation.

2. Courses taken with permission at other universities or post-secondary institutions will be considered for transfer credit if credit is granted at the transferring institution, provided that the standard of grade required within the student's UNB program is met. Students will be notified in writing at the time permission is given of the specific minimum grade which must be achieved.

3. In Faculties where the credit hour system is used, at least half of the credit hours for a degree must be taken at this University. In Faculties where the year-system is used, two years, including the final year, must be taken at this University. These provisions may be waived by the Registrar in consultation with the Faculty concerned in extraordinary circumstances.

4. Students entering a concurrent degree program are advised that at least one half of the requirements for each degree must be UNB credits.

5. Faculties may impose an academic decision based on the student's performance while studying at another university or post-secondary institution.

6. Grades of C - earned at the other institution normally will not be accepted if a minimum grade of "C" in the course is required in the student's program of study. Special requests for consideration of transfer should be made in writing to the Registrar. A decision will be made in consultation with the Faculty concerned.

G. Policy and Procedure for Supporting Student-Reservists

The University of New Brunswick is committed to providing appropriate academic accommodation to enable Student-Reservists to meet their military obligations. Such accommodations will be provided to both full-time and part-time students in ways that maintain the integrity of the student's academic program. Because each situation involving student - reservists will be unique, each will be dealt with on a case by case basis to ensure the most appropriate accommodation and support for the individual. To the extent possible, existing forms of accommodation as provided in the University calendar will be used to meet the student-reservist's needs.

II. French Language Policy

Fredericton

The University of New Brunswick undertakes to meet the needs of undergraduate students with respect to French:

1. By providing French Language courses at a level and of a type appropriate for graduates of French immersion programs in the public schools of New Brunswick.

2. By providing students in all faculties who are not bilingual with more information, encouragement and opportunity for the study of French. (See Certificate of Proficiency in French Section G.)

Saint John

The Saint John Campus of the University of New Brunswick intends to meet the needs of its undergraduate students with respect to French by providing (where feasible) French Language courses at a level and of a type appropriate for graduates of French immersion programs in the public schools of New Brunswick, and by providing students in all programs who are not bilingual with more information, encouragement and opportunity for the study of French.

Cette politique's addresse aux etudiant(e)s Anglophones. Les etudiant(e)s francophones sont egalement encourage(e)s a suivre des cours au niveau approprie dans la discipline de francais.

See also: Language of Examination (below).

III. Examination, Standing and Promotion

A. Course Syllabus

1. It is the function of the instructor to evaluate and assess a student's work in a course and to award interim and final course grades.

2. The final standing of each student, in each course is assessed on the final examination, if one is held, and term work (essays, reports, assignments, tests [including lab and field work tests], mid-course examinations, practicums or internships, attendance and participation requirements and any other work contributes to the final grade).

3. No later than the second (2nd) Friday of the term the instructor must provide the students attending with a course syllabus that includes:

   a. a full explanation of the basis on which the final grade will be calculated, that is: the weighting of tests, examinations, assignments, practicums or internships, attendance, and participation requirements, and any other work which contributes to the final grade.

   b. information on the approximate scheduling of term work which contributes to the final grade and an indication of when and how the final scheduling will be determined.

   c. The University of New Brunswick places a high value on academic integrity and has a policy on plagiarism, cheating and other academic offences.

Plagiarism includes:

   i. quoting verbatim or almost verbatim from any source, including all electronic sources, without acknowledgement;

   ii. adopting someone else's line of thought, argument, arrangement, or supporting evidence without acknowledgement;

   iii. submitting someone else's work, in whatever form without acknowledgement;

   iv. knowingly representing as one's own work any ideas of another.

   Examples of other academic offences include: cheating on exams, tests, assignments or reports; impersonating somebody at a test or exam; obtaining an exam, test or other course materials through theft, collusion, purchase or other improper manner, submitting course work that is identical or substantially similar to work that has been submitted for another course; and more as set out in the Academic Regulations found in the Undergraduate Calendar.

   Penalties for plagiarism and other academic offences range from a minimum of F (zero) in the assignment, exam or test to a maximum of suspension or expulsion from the University, plus a notation of the academic offence on the student's transcript.

   For more information, please see the Undergraduate Calendar, Section B, Regulation VIII.A. It is the student's responsibility to know the regulations.

4. The course syllabus shall be distributed to the class and may be provided:

   a. in writing in a regular class period or,

   b. by any electronic means which has been established as a method of communication within the course and for which student access and support are provided by the University.

5. The decisions made by the instructor about the content of the course syllabus are not appealable. Decisions made by the instructor about the weighting of tests, examinations, assignments, practicums or internships, attendance and participation requirements, and any other work which contributes to the final grade are not subject to appeal unless demonstrably unfair in the circumstances.

6. Regulations governing review or appeal of a grade assigned are found in the Review of the Grades section of the Calendar regulations.

B. Examinations and Evaluation of Course Work

1. The method of examination in a course is determined by the instructor.

2. Final examinations, if any, for fall term courses, and mid-course examinations, are held in December. Final examinations, if any, for winter term courses and for all-year courses (fall and winter term) are normally held in April.

3. Instructors must notify students, preferably within the first two weeks of classes and by no later than the mid-point of a course, if the final examination is to be a take-home examination or one that is to be included in the University's official examination schedule. Students must be informed if the final examination is an open or closed book format by the mid-point of the course. Such notification shall be:

a.   in writing distributed to the class in a regular class period or,

b.   by any electronic means which has been established as a method of communication within in the course and for which student access and support are provided to the University.

4.   The final examination in any course may be waived by the instructor. Notice that an examination has been waived must be communicated to the students attending the course within two weeks of the first date.

5.

a.   No examination or test may be held in the last 10 lecture days of any term or during the reading period, but see d) below.

b.   All term work is due no later than the last day of lectures.

c.   A paper, assignment or take-home examination given in lieu of final examination shall be provided to the students by the last day of classes and is due the last day of the examination schedule.

d.   The following may be exceptions to the regulations (a) and (c)

i.   courses with regular, usually weekly, tests,

ii.   course requiring laboratory examinations of a practical nature;

iii.   courses in which oral examinations are given. In such cases a mutually agreeable time may be arranged between the student and the instructor.

In the case of the exceptions i) and ii) the tests or examinations must be held during the regular class period. A student or faculty member reports instances of contravention of this regulation to the Registrar.

6.   Normally, tests held during the regular lecture period (other than final examinations scheduled by the Registrar) are to be conducted during a regularly scheduled class time. In exceptional circumstances and with the approval of the Dean, an instructor may schedule a test for another time. Such a test is to replace, rather than add to, the regularly scheduled class periods for the course and it must not interrupt other regularly scheduled classes or tests for students.

7.   The time period for an official examination scheduled during the final examination period shall not exceed three (3) hours.

There will be at least two (2) hours between the end of one examination period and the start of the next period, allowing for three (3) examination periods each day (Monday to Saturday) during the final examination period.

Students normally may not leave the examination room during the first half hour (30 minutes) of the examination period. Students may be permitted to enter the examination room during the first half hour and will only be permitted to enter after that time with approval of the course instructor or designate. In such cases the instructor or designate may provide additional writing time in response to the circumstances.

8.   Students may apply to the Registrar's Office to write a final examination at an alternate time on the basis of documented extenuating circumstances (See Item C., Final Examinations to be written at an Alternate Time).

The University recognizes that there are dates of religious significance other than those identified in the UNB Calendar of Academic Dates. Students whose religious beliefs would prevent them from attending classes or writing tests or final examinations due to their observance of those dates, should contact their instructor(s) at the beginning of the term to request accommodation. Deadlines for assignments that fall on dates of religious observance must still be met unless alternate arrangements have been agreed to by the instructor and/or the Registrar, as the case may require. Instructors will make reasonable offers to accommodate such requests. Instructors have the right to request verification of dates of religious observance.

9.   A student who is scheduled to write three examinations in one 24-hour period during the formal examination period may apply to the Registrar to write one of the examinations at another time during the examination period.

10.   Instructors must notify students as soon as possible and no later than two weeks prior to the end of classes, of the specific items, other than normal writing instruments (such as pens, pencils, rulers and erasers), they may use in the examination room. These include tables, formulae, memoranda, other electronic or mechanical aids. Notification shall be:
a. in writing distributed to the class in a regular class period, or
b. by any electronic means which has been established as a method of communication within the course and for which student access and support are provided by the University.

11.   UNB does not permit the use of personal communication devices during test or exam periods - in particular, devices that could potentially be used to communicate with others while writing an exam, or play back pre-recorded video, sound or text during an exam. Such devices include, but are not limited to, cell phones, pagers, text messaging devices, personal recording devices, PDAs, personal computers including laptops, certain types of calculators and electronic translators. Using such devices during exams will be considered an academic offense as per Section VIII of the University Regulations. Exemptions may be made by a professor if a particular device is required in order to complete the exam. See: Academic Calendar, Academic Section, V.A. 14.

12.   Students may see their own examinations and papers, by arrangement with instructor, after the grades have been released.

C. Language of Examination

Students who wish to write their examinations in French rather than English must apply in writing to the Registrar one month in advance of the examination date. Permission may be denied in certain courses, particularly in courses where language is part of the course content. Students admitted without having passed the appropriate high school or equivalent English course, or who were not required to demonstrate on admission an acceptable level of English usage on an approved English test, may, at the discretion of the instructor in consultation with the Registrar, be given special consideration in writing examinations, tests and assignments. Such special consideration may include oral examinations and/or extension of the time to write an examination. Consideration will not be granted after two years at UNB or any other English speaking institution.
Students who wish to be considered under this provision must make the request to the instructor no later than the mid point of the term.

D. Supplemental Examination

Supplemental examinations are not offered in any Faculty of the University, except the Faculty of Law.

E. Final Examinations Written at an Alternate Time

1.   Students, who by reason of illness or extenuating circumstances, are unable to write a final examination at the posted times may apply to the Registrar for permission to write a final examination at an alternate time. A final examination written at an alternate time takes the place of the regularly scheduled final examinations which the student was unable to write. Applications for a final examination at an alternate time, supported by the health certificate or other supporting documentation, must reach the Registrar within two weeks of the posted date of the final examinations which the student was unable to write.

2.   Students who become ill and withdraw for this reason during a final examination, or who feel that their performance was affected seriously by illness, even if they do not withdraw, must, if they wish to be eligible to take a final examination at an alternate time (deferred final examination), notify their instructor or an invigilator before leaving the examination room. They should then go immediately to be examined medically. They may then apply to the Registrar within two weeks of the original date of the final examination to write at an alternate time (deferred final examination). Students who know that they will be unable to attend can apply before the originally posted date.

3.   When a request to write a final examination at an alternate time is approved and will be written on campus, the student must contact the instructor in the course to determine a mutually agreeable time and place for the examination.

4.   The designation incomplete (INC) is recorded for the course in which approval has been granted for the final examination to be written at an alternate time. It is expected that the alternate examination will be written and a final grade submitted by the instructor to the Registrar's Office within two months after the final date for classes in the course in question. This period may be extended upon the recommendation of the course instructor and with the approval of the Registrar. If the final grade is not received by the appropriate date the Registrar will assign a grade of "F" on the student's record. Refer to the regulations on Incomplete for a further explanation of "INC" grades.

5.   It is expected that such examinations will be written after the date and time of the regularly scheduled final examination. Students who, because of documented extenuating circumstances, wish to write the final examination before the date and time of the scheduled final examination should submit their request and supporting documentation to the Registrar. If the alternate examination is approved then the student should contact the instructor and to see if an arrangement to write early is possible. Instructors have no obligation to permit a student to write an examination ahead of the scheduled date.

6. Normally examinations will be written on campus. Should students find it necessary to write the examinations off campus, they are required to submit their request and supporting documentation to the Registrar. The request will be reviewed with the instructor and when if it is agreed that the final examination is to be written off campus, the student will be advised. All arrangements are made through the Registrar's Office. Students are responsible for all charges incurred for final examinations written off-campus.

7. In the rare instance when a student is scheduled to write three final examinations in one 24-hour period during the final examination period, the student may apply to the Registrar to write one of the examinations at another time during the examination period.

8. Applications to take a final examination at an alternate time on grounds not considered acceptable by the Registrar may be referred to the appropriate Senate Committee. The student must make such request to the Registrar within two weeks from the date of the Registrar's letter of notification of this decision.

F. Students with Disabilities

The University of New Brunswick is committed to ensuring students with disabilities receive appropriate academic accommodations in accordance with the New Brunswick Human Rights Act and applicable UNB Policies and Procedures. Students with disabilities may request reasonable accommodations to enable them to complete academic requirements by providing the applicable campus centre, UNB Fredericton Student Accessibility Centre or the UNB Saint John Student Accessibility Centre, with satisfactory professional reports containing specific recommended accommodations necessary for the student to achieve the course, examination and program completion. Documentation may need to be renewed as appropriate to reflect the students' ongoing need for academic accommodation.

G. Grading System and Classification

Courses

Courses in the University are offered in a classroom setting, laboratory setting or through some method of distance education. The regular academic session year is September – April. Within this session, there are two terms, 15 weeks each (including the examination period) September – December and January - April. In addition, there is a Summer Term for both Fredericton and Saint John Campuses that runs from May 1-Aug 31. Within this term there are six sessions that have specific start and end dates. Details are listed under the Important Academic Dates by visiting http:www.unb.ca/academics/calendars.html. All course offered by the University are referred to as term courses or full-year courses.

Full-Year Courses: Those courses that are normally completed over the two terms associated with regular academic session year.

Term Courses: Those courses that are normally completed in one term during the regular academic session.

Competence in English Courses

The University places great importance on its students achieving competence in English writing. To this end, students enrolled in four-year baccalaureate programs are required to successfully complete with a mark of C or above a minimum of 12 ch of courses that contain a significant writing requirement. Such courses should provide students with substantive feedback and guidance to develop and improve writing skills. Students should consult their Faculty advisors to determine which courses satisfy this requirement. Designated courses in each Faculty which satisfy this requirement are identified by [W]. Transfer students, and students enrolled in programs that are not four-year baccalaureate programs, are advised to consult with their Faculty advisor for guidance on completing this requirement.

Credit Hours

1. Each Faculty is responsible for assigning credit values to courses within jurisdiction. These credit values are approved by the appropriate University Senate. Credit hour values may range from 1-8 although the typical term course has a 3 credit hour weight and a typical full-year course has a 6 credit hour weight.

   Students should consult the Financial Information Section of this calendar for information on tuition charges and full-time/part-time status based on the credit value of courses taken.

2. Most Faculties, in their own regulation, state the minimum number of credit hours which must be successfully completed for graduation in each degree program. Credit hour requirements for degree programs in Saint John are given in Section E, and in Fredericton are given in Section G.

3. Students accumulate credit hours, as assigned, for courses completed with a grade of D or better (see below).

4. Faculties may consider courses offered by other Faculties to have satisfied a half-course (normally 3 credit hours) or a full course (normally 6 credit hours) regardless of credit hours attached to the course in the calendar and recorded on the student's transcript of

record. Students should consult the relevant sections of this calendar for Faculty policies.

Grades

With the exception of the School of Graduate Studies and Faculty of Law, a candidate's final standing in a course is indicated by the following letter grades:

A+		4.3 grade points
A	excellent performance	4.0 grade points
A-		3.7 grade points
B+		3.3 grade points
B	good performance	3.0 grade points
B-		2.7 grade points
C+		2.3 grade points
C	satisfactory performance	2.0 grade points
D	less than satisfactory performance	1.0 grade points
F	failure	0.0 grade points
WF	failure	0.0 grade points

A grade of "D" will be considered for program credit only in certain circumstances. See Faculty regulations and refer to program descriptions in this Calendar.

Departments have the right to decide whether or not a "D" meets prerequisite or Major requirements. See appropriate degree and departmental listings.

Credit hours for courses with an "F" or "WF" grade may not be counted towards graduation, but will be used as credit hours attempted in assessing grade point average.

Courses taken at St. Thomas University as part of a student's regular course load in which the final grade is "C-" will normally not be accepted for credit if a grade off at least "C" in the course in question is required in the student's program of study.

Notations

1. INC (Incomplete)

Issued on the recommendation of the instructor and approved by the Registrar, in situations where students present written evidence of medical or extenuating circumstances which prevent completion of the work within the stated time period. It is expected that the work will be completed within two months after the final date for classes in the course. A grade of F will normally be assigned if the work is not completed. The period for completion may be extended upon recommendation of the instructor and with the approval of the Registrar. It is the responsibility of the student to seek such an extension before the expiration of the two month period. Evidence of medical or compassionate grounds to substantiate such a request must be submitted to the Registrar.

The designation incomplete (INC) is recorded for courses in which deferred examinations are to be written.

2. Aegrotat (AEG) Standing

Used rarely. The student has been unable to complete the course because of a serious illness or compassionate situation but has been given pass standing on the basis of previous work. Requests should be addressed to the Registrar.

3. AUD (Audit)

A student wishing to attend classes in a given degree credit course without being assigned a grade may register to "audit" the course, subject to the following regulations:

   a. Registration for audit will not be accepted without permission of the course instructor.

   b. The degree of class participation allowed to an auditor is at the discretion of course instructor. No grade is assigned for each course and such a course is not a credit.

   c. The normal regulations and deadlines regarding course adds and drops apply.

   d. A 'credit registration' in a course may not normally be changed to an 'audit' after the first two weeks of the term. Similarly a registration for 'audit' may be changed to a 'credit registration' only with the support of the faculty, and with the permission of the Registrar.

   e. In courses with enrolment requirements and/or restrictions, priority for registration will be given to individuals taking the courses as full fee-paying registrants.

   f. For a part-time student the audit fee will be one-half of the regular course fee (see Fees, Section C).

The following actions may also appear on the student transcript in lieu of or adjacent to the grade.

4. **CR** (credit) **NCR** (no credit)

5. **X.** (Extra)

   Extra course, not credited to the program the student is enrolled in during that session and the grade is not included in the calculation

of grade point averages. Such a notation must be requested by the mid-point of the term.

6. **#** On the basis of an appeal, the grade shown but not included in grade point average calculations.

7. **W** (Withdrawn without academic penalty)

8. **CTN** (Course continues next term)

H. Calculation of Grade Point Averages

Grade point averages are calculated by dividing the total number of grade points obtained (credit hours X grade point weight) by the number of credit hours attempted during the period in question in the program. Grade point averages are shown to one decimal place. The University calculates two grade point averages, which form part of the student's official record: the Assessment Grade Point Average; and the Cumulative Grade Point Average.

With the approval of their faculty advisor, a student may specify that a course is "extra" to the program and should not be included in their grade point average. Such a notation must be requested by the mid point of the term.

Assessment GPA: For all students, the assessment GPA is calculated at the end of the assessment period, May - April, provided that 24 credit hours or more have been attempted in the program since the last assessment in that program. All work attempted toward the current program of study (including the no degree program) is included in the assessment with the exception of courses designated with the "W", "#", or "X" notation.

Cumulative GPA: Is based on all work taken toward a degree program. The cumulative grade point average is used to determine the student's divisional standing algorithm at graduation.

Scholarship GPA: In addition, for the purpose of awarding scholarships, a Scholarship GPA is calculated at the end of the assessment year (May to April) provided that 24 credit hours or more have been attempted, regardless of program. For students involved in work placement programs such as Co-op or PEP, the scholarship average is calculated using Dean's List criteria. This GPA is held internally and is not displayed on the student's transcript of record.

I. Standing and Promotion Requirements

1. In order to continue in good academic standing, a student must achieve an assessment GPA of at least 2.0 for the assessment period. A transcript notation "In good academic standing", appears at the end of the term record.

   a. A student whose assessment GPA falls below 2.0 but above 1.0 in an assessment period is placed on academic probation. A student is allowed to go on academic probation only once in a program.

   b. Academic probation constitutes a notice of unsatisfactory performance and is a warning that the student must improve to meet the grade point average requirements of the program in order to avoid being required to withdraw from the University.

   c. A student who has previously been placed on academic probation and whose GPA in any subsequent assessment period falls below 2.0 is, subject to review by the Faculty concerned, required to withdraw from the University for at least 12 months. If such a student is readmitted, it is normally on academic probation.

   d. A student whose GPA falls to 1.0 or below in any assessment period is required to withdraw from the University for at least 12 months. If such a student is readmitted, it is normally on academic probation.

NOTE: No credit is granted for courses taken during the 12 month period during which a student is required to withdraw.

2. Students whose GPA on assessment is such that they would normally be placed on academic probation, or be required to withdraw from the University, will be allowed to graduate if all other requirements of the program have been completed at that time. Law students should refer to the Faculty regulation in the Faculty of Law Calendar.

3. If, at the end of the term in which a student has completed all the other requirements of the program, the student has not reached the end of an assessment interval, the student will be allowed to graduate without reference to the GPA in that session.

J. Dean's List Criteria

The Faculties of the University publicly recognize superior academic performance for their students by publishing Dean's lists. Such distinction is also noted on the transcript of record. Criteria for inclusion on a Dean's list are as follows:

1. Students must be enrolled in a degree, diploma or certificate program.

2. In all Faculties an assessment grade point average of 3.7 or higher must be achieved, except in the Faculty of Law where the minimum assessment grade point average for inclusion on the Dean's list is 3.3 and the student stands among the top 10 percent of their class.

   a. Decisions for full-time and part-time students are based on assessment grade point average calculated in May of each year subject to provisions for the determination of the assessment GPA as outlines in Section III. H. Calculation of Grade Point Averages.

   b. Students enrolled in a concurrent or joint degree program will be considered for the Dean's list in both Faculties represented and the decision will be based on the single assessment grade point average for the concurrent or joint degree program.

3. Students may also be considered for inclusion on the Dean's List in the following special circumstances. In all instances, the applicable minimum of 3.7 grade point average (or 3.3 GPA for the Faculty of Law) must be achieved.

   a. Graduating students who in their final year of study do not have any assessment grade point calculation will be considered provided at least 12 credit hours or work must have been undertaken since the last assessment; have a minimum 3.7 GPA over the courses completed since the last assessment; and were on the Dean's List at the last assessment.

   b. Co-op students and students on a professional experience program (PEP) will be considered provided at least 12 credit hours have been completed in one study term since their last assessment and have a minimum 3.7 GPA over the courses completed.

   c. Course work done off-campus with permission, including courses completed as part of an exchange program, will not form part of the assessment grade point average and subsequent decision concerning inclusion on Dean's list. The Dean has the right to add such students to the Dean's List where deemed appropriate.

   d. Students who transfer from one UNB degree program to another in January may request consideration for Dean's List provided they have completed at least 12 credit hours in the new program with a minimum 3.7 GPA over the courses in the new program and have completed at least 24 credit hours since their first admission to UNB or since their last assessment.

K. Submission of Final Course Grades

1. The work term in a course (excluding any work given in lieu of a final examination, see Examination, Standing and Promotion regulations, item A [6]) must be submitted by the last day of lectures or earlier as required by the instructor. The instructor must submit a final grade based on the work submitted by the student, including term work and examination, as determined by the instructor.

2. Once a grade has been submitted a student is not permitted to do extra work or additional to that required of other students in a course in order to gain a better grade in the course.

3. A request to change a recorded grade in a course is to be made to the Registrar via the instructor's secure web grade change form. An explanation for the reason(s) for the change must be included at the time of the submission.

L. Review of Grades

1. Review of Grades on an Individual Piece of Work

   a. Students may discuss with the course instructor the grade on any piece of work regardless of its value. For a course that is not the responsibility of a single academic unit, the coordinator of the course will replace the Department Chair in the review process.

   b. For purposes of the formal review process, individual pieces of work may include: Term tests, computerized tests, examinations other than final examinations, term papers, essays, reports, group projects and oral tests/examinations worth at least 20 percent in the calculation of the final grade in the course.

   c. Students have the right to request a formal review of graded assignments such as those listed above. The grounds are restricted to: the overall assessment of the evaluation is demonstrably unfair; the evaluation was not consistent within the class; there was a miscalculation of the grade.

   d. There are two steps to follow for the formal review process:

i. The student must discuss the piece of work with the instructor involved within two weeks of the receipt of the grade for the individual item.

ii. After the first step and if requested by the student in writing or by e-mail to the Chair of the Department, or Dean of the Faculty if there is no Department or Chair, a review will be conducted with such Chair, the instructor and the student. If desired, a student has the right to meet with the Chair without the instructor present prior to this review. The review must be conducted within 7 days after the review with the instructor. The decision of this review is final and the reasons for this decision will be provided to the student in writing by the Chair.

iii. A student who has not requested a grade review of an individual piece of work that is reviewable, or who has requested a grade review of an individual piece of work and is not satisfied with the result, may not ask for a review of a final grade on the basis of that individual piece of work.

2. General Information

a. In all reviews, it is expected that every effort will be made to carry out the process expeditiously. In extraordinary circumstances that extend the review timeline, the Dean (or designate) in consultation with the Registrar may provide the student with alternate option(s).

b. Graded materials held by the instructor must be retained for twelve months after the end of the term.

c. Students requesting a review are expected to provide reviewers with original graded assignments returned to them by the instructor. Such assignments must not have been altered (please refer to the section on university regulations governing academic offences).

d. Work will be reviewed, as requested, in a manner that ensures that all concerns raised by the student have been properly addressed, taking into account the course outline and that the totaling of the grades and other items contributing to the grade were done accurately. In instances when consistency in grading is being considered, a minimum of three other pieces of class work completed by other students will be examined by the reviewer(s). Graded materials in the custody of the instructor will be provided to the reviewers by the instructor in a manner that ensures identifying information has been removed. Where the graded work has been returned to students, the student requesting the review must provide graded work for comparison.

e. The grade originally assigned may be raised, remain the same or be lowered as a result of the review.

3. Review of the Final Course Grade

a. Prior to requesting a formal review of a final grade, students will discuss the grade with the instructor. For a team-taught course the coordinator of the course will replace the instructor in the review process. Where no course coordinator exists, the Dean of the Faculty or Chair of the Department will designate one of the course instructors as course coordinator.

b. Students who are not satisfied with the decision of the instructor or course coordinator have the right to request a review of the official final grade received in a course on the proper form (available in the Office of the Registrar or online at https://www.unb.ca/registrar). Such requests must be received by the Registrar, in writing, within 90 days after the end of the course or examination period, where applicable. A fee of $50.00 must accompany the request. The fee will be refunded if the grade is subsequently raised.

c. Students should clearly outline the grounds for the request to review the final grade. Normally the grounds are restricted to one or more of the following:

i. the final grade is demonstrably unfair;

ii. the calculation of the final grade was not consistent with the class;

iii. the calculation of the final grade was not based on all the work completed; or

iv. there was miscalculation of the final grade;

d. The Registrar shall refer the request for formal review to a committee consisting of:

i. one member who is selected by the student and who is a member of the Department or Faculty involved;

ii. one member who is selected by the instructor and who is a member of the Department of the Faculty involved; and

iii. the Chair of the Department or Dean of the Faculty or a designate selected by the Chair or Dean, provided that the Chair, Dean or designate shall be a member of the Faculty or Department. In the event that the student or instructor is unable to select a member for the review committee, the Dean or Chair will select.

e. If the review is a class action involving two or more students enrolled in a course:

i. the students who are in the course requesting the review will collectively select one member of the Committee; and

ii. if more than one instructor, the instructors involved in the teaching of the course will collectively select one member of the Committee.

iii. The criteria for a grade review for a class action are as follows:

1. the grade of all class members requesting the review must be at issue;

2. the grounds for the review must be the same for all class members requesting the review; and

3. the requested outcome of the review must produce a consistent result for all class members.

f. Grades assigned in practicum courses, in co-op courses, or final examinations in any course shall be subject to review only under the final course grade review process.

g. Students who intend to appeal the results of a review of final course grade must do so within 4 weeks after the date of notification by the Registrar's Office. The procedures for filing an appeal must be followed and reasons for appeal are to be clearly outlined.

IV. Right of Appeal – Standing and Promotion Decisions

Students on the Fredericton Campus will submit appeals to the Senate Student Standings and Promotions Committee; on the Saint John Campus, appeals will be submitted to the Student Appeals Committee. The term 'appeals committee' as used in this section refers to both of these committees. Appeals are to be submitted via the Office of the Registrar on the respective campus.

1. Entitlement and Jurisdiction

1. If one year or more has elapsed since the academic decision in question was made, student appeals will be considered by the appropriate campus Senate Appeals Committee only in exceptional circumstances.

2. Student appeals on the Fredericton Campus are considered by the Senate Committee on Student Standings and Promotions, and on the Saint John Campus by the Senate Student Appeals Committee. Appeals pertaining to admissions are heard on the Fredericton Campus by the Senate Admissions Committee and on the Saint John Campus by the Senate Student Appeals Committee. Appeals are submitted via the Office of the Registrar on the respective campus.

3. The University reserves the right to withhold notification of an academic decision if a student has not satisfied their financial obligations to the University. The Senate Student Standings and Promotions Committee in Fredericton, or the Senate Student Appeals Committee in Saint John, may refuse to hear appeals submitted after the deadline because the notification of an academic decision was withheld for failure to satisfy financial obligations or because notification of an academic decision was not received as a result of a failure to provide the University with an accurate mailing address.

4. Subject to the following regulations, students may appeal academic decisions.

NOTE: Most reviews concerning grades assigned for individual pieces of work or final grades are subject to the Grade Review Process. An appeal to the appropriate appeals committee is permissible only if the review was conducted without due regard to proper procedure or in a manner which is not fair in all of the circumstances. Students may appeal final grades only after all steps of the grade review process have been completed.

2. Grounds for Appeal

1. The appropriate appeals committee may grant an exemption from the application of a University Regulation or from the effect of an academic decision, on the grounds of compassion, health, or other

extenuating circumstances beyond the control of the student. A student requesting such an exemption must state the grounds on which the request is based and provide pertinent documentation.

2. The Committee may grant relief on the grounds that an academic decision has been made without due regard to proper procedure, or in such a manner which is unfair in all of the circumstances. A student requesting such relief on appeal must state the ground on which the request is based and provide pertinent documentation.

3. Appeals Procedure

1. A student is entitled to seek the advice of the Student Advocate concerning the right of appeal. There is a Student Advocate available on both campuses: the Assistant Vice-President (Student Services) or designate (for Fredericton appeals) and the Director of Student Services or designate (for Saint John appeals).

2. Where so requested in writing by a student, the Student Advocate shall act on behalf of the student.

3. Appeals are to be made in writing, addressed to the appropriate committee by way of letter to the campus registrar.

4. Appeals pertaining to academic status at the end of an assessment period must be filed on or before July 15 of that year. Where circumstances warrant, the Committee may consider student appeals which do not meet the normal deadline requirement.

5. Appeals shall state the grounds on which the appeal is based, provide supporting documentary evidence and state whether the student will attend the hearing and whether the Student Advocate will represent the student at the hearing.

6. The Committee may receive documentation in support of an appeal after the July 15th deadline set for the filing of appeal itself. The late filing of such supporting documentation may result in delay in the determination of the case.

7. After receiving an appeal, the Secretary of the Committee shall:

   a. make a reasonable attempt to give notice to the student, or the person acting on the student's behalf, of the time, place and manner in which the Committee will proceed, and further shall give access to the student or the person acting on the student's behalf to the materials relevant to the appeal;

   b. give notice to the instructor, Chair of the Department and Dean of the Faculty concerned of the time, place and manner in which the Committee will proceed, and request that any written materials relevant to the appeal be filed with the Committee in such a manner that the right of access provided in a.) is observed.

8. The Committee hears and determines the matter. The decision of the Committee, which is provided to the student in writing, is final (see below). No re-appeal of the decision will be heard by the Committee unless new evidence is presented and deemed by the Committee to be of sufficient importance to justify clearly the reopening of the case.

4. Senate Review

A student may request that the relevant Senate review a decision of the appropriate appeals committee.
The only grounds for such a request are:

a. the decision was made without due regard to proper procedures, with the result that the student was materially disadvantaged; and/or

b. the decision was made in a manner which is not fair in any of the circumstances.

Advice and Assistance

A student is entitled to seek the advice of the Student Advocate with respect to an application for Senate Review. The Student Advocate is the Assistant Vice-President (Student Services) or designate (Fredericton appeals) or the Director of Student Services or designate (Saint John appeals).
Where so requested in writing by a student, the Student Advocate shall act on behalf of the student to the extent requested in application for Review.

Procedures

1. An application for Senate Review shall:

   a. be filed in the Office of the Secretary of Senate within thirty (30) days of the date of the letter of notification of the decision of the appeals committee made under provisions of the Appeal Procedures.

   b. made in writing, addressed to the Secretary of the Senate, and state the grounds on which the application is based.

2. On receiving an Application for Senate Review, the Secretary of Senate shall:

a. notify the student or person acting on the student's behalf of the time, place and manner in which the Review will proceed, and further shall ensure access by the student, or the person acting on the student's behalf, to the materials relevant to application;

b. give notice to the appropriate appeals committee of the time, place and manner in which the Review will proceed and request that any written material relevant to the application be filed with Senate in such a manner as that the right of access stipulated in 2a) is observed.

c. ask the Senate Nominating Committee and the President to establish a Review Committee.

V. Minor Programs

The University offers students an opportunity to broaden and complement their programs of study by completing the requirements for a Minor. A complete list of approved Minor Programs is available in the Registrar's Office. A Minor program can be a University interdisciplinary Minor or one offered through a faculty or department.

1. Students interested in pursuing a Minor Program should consult with their program advisor to determine if a Minor will be permitted and to discuss its relation to their program of study. Advice and course approval must then be obtained from the coordinator, committee or individual responsible for the Minor. Normally, a student must declare a Minor on or before registration for final year. A student may declare a Minor after this date only with the approval of the Registrar, with the concurrence of the Department(s) concerned.

2. A Minor can be taken only in conjunction with a degree program and must be completed while the student is qualifying for the degree. Successful completion of the Minor will be recorded on the student's transcript of record. The same procedure must be followed for each successive Minor.

3. A Minor shall consist of eight term courses or the equivalent (a minimum of 24 credit hours) and shall be selected to form a coherent set or sequence of courses. The student must achieve a grade of "C" or better in each course for it to be counted as part of the Minor. Compulsory or required courses in a student's degree program normally may not form part of the Minor.

4. A student who has completed a Minor located in one degree program may apply to and, if admitted, enter a second degree program to obtain a second bachelor's degree. Such a student could obtain the Majors or Honours designation in the same field as the Minor if the requirements for are completed successfully under the regulations governing a "Second Undergraduate Bachelor's Degree".

5. Students interested in pursuing more than one minor program must have permission from their faculty advisor. All above regulations apply.

VI. Application to Graduate and Listing of Graduates

A. APPLICATION TO GRADUATE

1. Students must make application to graduate by 1 March, for May graduation and 1 September for October graduation. Such application is done either by submitting an electronic "Application to Graduate" form available from the UNB Graduation website (https://www.unb.ca/graduation) or by completing an "Application to Graduate" card available from the Registrar's Office.

Courses that are attached to a distinct session that ends after the January - April session are not counted in the assessment for May graduation eligibility.
B. Candidates for all undergraduate degrees, except candidates for the degree Bachelor of Juris Doctor, shall be listed in the graduation program alphabetically by First Division, and General Standing, based on the cumulative grade point average of all UNB courses (including certain approved St. Thomas courses) attempted in the program. Candidates with Honours and Distinction standing will be listed separately.
C. Candidates for the degree of Bachelor of Juris Doctor are listed alphabetically without divisions.
Divisional standing will be recorded in the student's transcript based on the cumulative grade point average as follows:

- First Division: 3.5 or better
- Second Division: 2.5 or better but less than 3.5
- Third Division: Less than 2.5

D. A student who has received a bachelor's degree from UNB may return and complete the requirements of the honours program in the same field as in the original degree or the requirements in another major or honours field in the same degree. Such a student will not receive the degree again but a record of the completion of the second requirements will be carried on the student's transcript. A second same degree is permitted in limited

cases. Refer to <u>Section Q, Requirements for a Second Undergraduate Bachelor Degree</u> in the Admissions section of this Calendar.

E. Students are not permitted to graduate at a ceremony during a spring Encaenia other than the one for which they are scheduled, except in special circumstances at the discretion of the Registrar.

F. Candidates fir certificate and/or diploma programs must submit a "Completion of Certificate/Diploma Form" available on the applicable Registrar's Office website. Certificates and Diplomas are awarded in October, January, and May.

VII. Requirements for a Second Undergraduate Degree

Second Different Undergraduate Bachelor Degree

1. The general regulations of the University and the regulations of the degree program concerned must be satisfied. Refer to the appropriate section of this calendar for the regulations of the degree program.

2. Degree and departmental regulations concerning option, concentration, Major or Honours must be satisfied.*

   *Throughout these regulations, the use of terms "option", "concentration", "major", and "honours" vary by faculty. All of these terms denote some degree of specialization.

3. The minimum number of credit hours, or courses, which must be successfully completed beyond the work required for the previous degree must not be less than the normal load of the final academic year in the degree program concerned. More than the minimum number of credit hours, or courses, may be required.

4. The courses taken must be approved by the Dean and the Department, or Departments, under which the option, concentration, Major, or Honours, falls.

5. In Faculties where the credit system is used, at least half the credits for a degree, diploma or certificate must be taken at the University; in Faculties where the year-system is used, two years must be taken at this University. It is normally expected that the final year of study be completed at this University.

6. Candidates for a second different degree may not normally choose the same major, honours, option or concentration as in the first undergraduate degree.

7. Students must make specific application to the Associate Registrar/Admissions for entry to the second different degree program.

8. The final decision on the course work requirements for a second different undergraduate bachelor degree shall be a matter of agreement between the Registrar and the Dean, after consultation with the Chairs of Departments concerned.

9. Students may obtain further undergraduate bachelor degrees. Students are encouraged to consider proceeding to more advanced studies at the honours or graduate level.

Second Same Undergraduate Bachelor Degree

1. A second same degree is permitted in limited cases. The general regulations of the University and the regulations of the degree program concerned must be satisfied. Refer to appropriate section of this calendar for the regulations of the degree.

   a. On the Fredericton Campus, the Faculty of Arts and the Faculty of Science permit in a second same undergraduate Bachelor degree.

   b. On the Saint John Campus, the Faculty of Arts and the Faculty of Science, Applied Science and Engineering permit a second same undergraduate Bachelor degree.

2. Degree and Departmental regulations concerning option, concentration, Major or Honours must be satisfied.*

   *Throughout these regulations, the use of terms "option", "concentration", "major", and "honours" vary by faculty. All these terms denote some degree of specialization.

3. The minimum number of credit hours, or courses, which must be successfully completed beyond the work required for the previous degree must not be less than the normal load of the final academic year of the degree in the program concerned. More than the minimum number of credit hours, or courses may be required.

4. The courses taken must be approved by the Dean and the Department, or Departments, under which the option, concentration, Major, or Honours, falls.

5. In Faculties where the credit system is used, at least half of the credits for a degree, diploma or certificate must be taken at this University; in Faculties where the year-system is used, two years must be taken at this University. It is normally expected that the final year of study be completed at this University.

6. Candidates for a second degree may not normally choose the same major, honours, option or concentration as in the first undergraduate degree.

   Students may be permitted to upgrade a Minor or a Major from the first degree under the following *Conditions:*

   a. A minor from the first degree may be upgraded to a Major or Honours after completion of the first degree.

   b. A Major from the first degree may be upgraded to an Honours after completion of the first degree.

   c. In either case, a notation only will be included on the student record and a second degree will not be awarded.

   Students will not be permitted to include a Minor in the second degree.

7. Students must make specific application to the Associate Registrar (Admissions) for entry to the second degree program.

8. The final decision on the course work requirements for a second different undergraduate bachelor degree shall be a matter of agreement between the Registrar and the Dean, after consultation with the Chairs of the Departments concerned.

9. Students may obtain further undergraduate bachelor degrees. Students are encouraged to consider proceeding to more advanced studies at the honours or graduate level.

Graduates of other Universities are not eligible to apply under these regulations. Applications from such candidates will be considered for possible acceptance and advance standing on receipt of official transcripts submitted to the Associate Registrar (Admissions). Students who desire to complete requirements for two different Bachelor Degrees at the same time will be granted such permission provided approval from both Faculties concerned has been granted. If permission is granted, students must be admitted to the second program by the Admissions Office. Requirements for each degree program are determined by each Faculty. This arrangement is separate from the Concurrent Degree Programs offered by the University.

VIII. Academic Offences

NOTE: Consideration of a request to withdraw from a course or courses involved in an academic offence will not be given until the case is resolved.

Academic offences include, but are not limited to, the following:

A. PLAGIARISM

Plagiarism includes:

1. quoting verbatim or almost verbatim from any source, regardless of format, without acknowledgement;

2. adopting someone else's line of thought; argument, arrangement, or supporting evidence (such as, statistics, bibliographies, etc.) without indicating such dependence;

3. submitting someone else's work, in whatever form (essay, film, workbook, artwork, computer materials, etc.) without acknowledgement;

4. knowingly representing as one's own work any idea of another.

NOTE: In courses which include group work, a penalty may be imposed on all members of the group unless an act of plagiarism is identified clearly with an individual student or students.

Procedures

In the case of plagiarism, the instructor must make every reasonable effort to discuss the case with student or group and follow one of two courses of action:

1. If the instructor is satisfied that the plagiarism was the result of a genuine misunderstanding, the instructor shall complete an academic offence incident report in a form approved by the Registrar's Office, containing the student's name and the particulars of the incident, and submit to the Registrar who shall advise the appropriate Dean, and the Chair of the student's program or Department where applicable. The Registrar shall notify the student by registered letter and/or electronic mail of the regulations governing plagiarism, the possible consequences, the student's right to appeal, the right to appear before the appropriate appeals committee (Student Standing and Promotions Committee on the Fredericton campus and Senate Student Appeals Committee on the Saint John campus), and the procedures involved. The Registrar shall make available to the student a copy of the academic offence incident report and supporting documentation. While a case of plagiarism resulting from a genuine misunderstanding will not be considered a student's first offence, a second plea of ignorance by the same student in response to a subsequent allegation of plagiarism will not be accepted; similarly, a subsequent incident report indicating that the alleged plagiarism is a result of genuine

misunderstanding responding will be treated as an allegation of deliberate plagiarism. A student responding to the instructor's allegation must do so in writing within three weeks of the date of the Registrar's notification. The student is urged to submit to the appropriate appeals committee a written statement regarding the case.

In a first incident of plagiarism resulting from genuine misunderstanding, the instructor may permit the student to submit a genuine piece of work to be graded in place of the one plagiarized. If the student does not appeal, the time allowed for submission of work is three weeks from the date of the Registrar's letter of notification. In the case of an appeal, where the instructor's allegation is upheld, the period of time allowed for submission is as determined by the appropriate appeals committee.

2. If, in the view of the instructor the plagiarism was deliberate, the instructor shall complete an incident report in a form approved by the Office of the Registrar, containing the student's name and the particulars of the incident, and shall submit to the Registrar who will advise the Dean of the Faculty concerned and the Chair of the student's program or Department where applicable. The Registrar shall notify the student by registered letter and/or electronic mail of the regulations governing plagiarism, the possible consequences, the student's right to appeal, the right to appear before the appropriate appeals committee, and the procedures involved. A student appealing the charge of an academic offence must do so in writing within three weeks of the date of the Registrar's letter of notification. On receiving an incident report alleging an act of deliberate plagiarism, or on receiving an incident report alleging a second commission of plagiarism by the student which is determined viewed by the instructor to be as a result of genuine misunderstanding, the Registrar shall refer the matter for a hearing to the appropriate appeals committee. A student who wishes to respond to this allegation is urged to submit to the appeals committee a written statement regarding the case, within three weeks of the date of the Registrar's letter of notification. The Registrar shall inform the student by registered letter or electronic mail of the referral to the appeals committee, and the wish of the Committee that the student be present when the case is heard.

3. The appropriate appeals committee, upon the conclusion of a hearing into the case, or following the review of the written materials if the student does not appear, must make one or more of the following findings prior to proceeding to an assessment of a penalty for deliberate plagiarism.

   a. On hearing a case involving a first incident report alleging that a student has committed an act of deliberate plagiarism, the appeals committee must first decide whether an act of plagiarism has occurred. If the Committee so finds, the Committee must then determine whether the plagiarism was deliberate, or an act of genuine misunderstanding. If the former, the appeals committee will proceed to assess penalties in accordance with this Regulation, if the latter, the appeals committee will assess no penalty, but will direct the Registrar to note in the student's academic file that the students has had one finding of genuine misunderstanding.

   b. If the case before the appeals committee (i) follows a prior finding of plagiarism, or (ii) is a second allegation of plagiarism as a result of genuine misunderstanding, the appeals committee may not make a further finding of genuine misunderstanding in disposing of the case. The appeals committee may only make a finding that the alleged act of plagiarism was deliberate plagiarism or that the alleged act of plagiarism was not an act of plagiarism.

Penalties for Deliberate Plagiarism
In case of deliberate plagiarism, the penalties are:
First Offence: If the student does not appeal or if, on appeal, the Committee upholds the instructor's allegation:

1. A notation will be placed on the student's transcript of academic record concerning the academic offence. The length of time the notation appears on the student's transcript of academic record is to be decided when the penalty is imposed and will depend on the severity of the offence.

2. The student may be required to submit a satisfactory and genuine piece of work to replace the one involving plagiarism. If the assignment is not resubmitted or is unsatisfactory, the student will receive a grade of F (zero) in the course. **NOTE:** If this penalty is assessed, the period of time allowed for the submission of the work will be determined by the Registrar in consultation with the faculty member making the charge and, where appropriate, the Committee.

3. The student will receive a grade of F (zero) for the piece of work and, depending on the severity of the offence, may receive a grade of F for the course.

4. Other penalties as outlined in penalties for Other Academic Offences may be imposed.

Subsequent Offence: In cases where the Committee considers that the student has plagiarized again:

1. The student will receive a grade of F (zero) for the course, and a notation of the academic offence will appear on the student's transcript of record. The length of time the notation appears on the student's transcript of academic record is to be decided when the penalty is imposed.

2. Other penalties as outlined in penalties for Other Academic Offences may be imposed.

B. OTHER ACADEMIC OFFENCES

1. Cheating on examination, tests, assignments or reports, including but not limited to:

   Impersonating a candidate at an examination or test or in connection with any assignment in a course or availing oneself of the results of impersonation.

   Obtaining, through theft, bribery, collusion, purchase, or other improper manner,

   a. an examination or test paper prior to the date and time for writing the examination or test;

   b. academic materials belonging to another person, e.g. laboratory reports, assignments, papers, computer materials, datasets.

2. Falsifying or knowingly submitting false assignments or credentials, records, transcripts, or other academic documents.

3. Submitting a false health or other certificate.

4. Submitting identical or substantially similar work for one course or program of study, which has been or is being submitted for another course or program of study, without the prior express knowledge and approval of the instructors.

5. Interfering with the right of other students to pursue their studies.

6. Knowingly aiding or abetting any of the above offences.

7. Tampering with, or altering, in any deceptive way, work subsequently presented for a review of the grade awarded.

Procedures
The instructor and, where applicable, the invigilator or other appropriate person shall, where practical, discuss the matter with the student concerned.
The instructor or the instructor's representatives, if satisfied that an academic offence has been committed, shall complete an academic offence incident report and shall submit it, together with attached information, to the Registrar. The Registrar shall report it to the Chair of the Department (where applicable) and the Dean of the Faculty concerned. Each case will be referred by the Registrar to the appropriate Committee for review and appropriate action. The Registrar shall inform the student by registered letter and/or electronic mail of the referral to the Committee, the student's right to respond, the wish of the Committee that the student be present when the case is heard, and the procedures involved. A copy if the academic offence report and attached information will be provided to the student in a timely manner. The student is urged to submit to the Committee a written statement regarding the case. A student responding to the decision, shall do so in writing within three weeks of the date of the Registrar's letter of notification.
Penalties
A student who is found guilty of an academic offence will have two penalties imposed:

1. A notation on the student's transcript of academic record concerning the academic offence. The length of time the notation appears on the student's transcript of academic record is to be decided when the penalty is imposed.

2. A grade of F (zero) in an examination, test or course.

   One of the following penalties may also be imposed.

3. A recommendation to the President for suspension for a specified period. The recommendation is to include the length of time the notation is to appear on the student's transcript of academic record.

4. A recommendation to the President for expulsion from the University. If the student is expelled, a permanent notation will appear on the student's transcript of academic record.

C. GENERAL

1. Consideration of a request to withdraw from a course or courses involved in an academic offence will not be given until the case is resolved.

2. Students on the Fredericton Campus will submit appeals to the Senate Student Standings and Promotions Committee; on the Saint

John Campus, appeals will be submitted to the Students Appeals Committee.

IX. Official Withdrawal (Voluntary) From University

A student who is considering withdrawing from study is strongly advised to consult with their faculty advisor. If the student decides to withdraw from University, the Registrar's Office must be notified in writing and the necessary process on the computerized registration system must be completed to avoid failing grades. The official date of withdrawal will be the date written communication is received in the Registrar's Office or the date recorded on the computerized system. Notifying instructors or ceasing to attend lectures does not constitute official withdrawal.

X. Confidentiality, Security and Release of Student Academic Records

The term "official academic record" when used in these policies means the information concerning admission and academic performance of students as it is contained in any record of information however recorded or stored.

A.   The official records of students are the property of the University.

B.   The Registrars and any designated officer, where applicable, shall retain custody of the official student academic records, however recorded or stored, in the Office of the Registrar, the School of Graduate Studies, and the Faculty of Law, all of the University of New Brunswick Fredericton and Saint John ("the University"), and shall be responsible for the security and maintenance of all such records. The security and maintenance of the electronic and student information system used to retain student records shall be the responsibility of the Department of Information Technology Services.

C.   Students desiring to have their names changed on their official student record be it by means of alteration, deletion, substitution or addition must submit appropriate supporting documentation to the Office of the Registrar.

D. RELEASE OF INFORMATION

1.   Except as provided herein, official academic records are confidential and shall not be divulged to any third party, including parents or guardians, except as noted in this statement, without the written consent of the student concerned.

2.   Students have the right to official copies of their University of New Brunswick transcripts of record. Official transcripts issued to students are identified as such on the transcript. Official transcript order information is found on the transcript request webpage https://es.unb.ca/forms/official-transcript-order-form/. Any requests should be submitted to the Registrar's office with the required fee. Transcripts and degree parchments will be withheld for students, including former students, who have failed to meet their financial obligations to the University. Students have the right to access their transcripts of record as held in the computerized filed and to print unofficial copies of their transcripts of record.

3.   Partial transcripts will not be issued.

4.   Transcripts and personal information contained in the official student records shall be released only in accordance with University policy:

a.   Where the person to whom the information relates has identified that information in particular and has consented to its disclosure;

b.   For the purpose for which it was obtained or compiled or for a purpose consistent therewith;

c.   To an officer or employee of the University who needs the record in the performance of their duties;

d.   For the purpose of complying with a requirement to provide information lawfully imposed upon the University by a federal/provincial government authority;

e.   Where the disclosure is necessary to aid in the investigation of allegations that individuals have made false statements or engaged in other misleading conduct concerning their attendance or performance or status within or completion of an academic program of the University;

f.   In compelling circumstances affecting the health or safety of an individual, if upon disclosure, notification thereof is mailed to the last known address of the individual to whom the information relates;

g.   In compassionate circumstances, to facilitate contact with the next of kin or a friend of an individual who is injured, ill or deceased; or

h.   To a person who has been authorized by the individual to whom the information is related to make an enquiry on that individual's behalf, or, where that individual is incapacitated,

has been authorized by the next of kin or legal representative of that individual.

5.   The Campus Registrar may authorize access to academic records for the purpose of research. Students of the University may examine their personal official academic records held in paper files, with the exception of letters of reference provided to the University in confidence. A member of the Registrar's Office or a designated officer on the campus where the record is held will be present during such an inspection. Students may examine letters of reference or other information provided to the University in confidence only with the written permission of the referee or writer being the first requested and received by the appropriate Registrar or designated officer holding the file.

6.   The Office of the Registrar will not normally provide students or third parties, except as noted below, with copies of documents on file, such as transcripts from other institutions, or correspondence provided to the University in confidence. In the case of a request for copies of documents made to a Campus Registrar's Office, an exception may be made in severe situations such as where an international student is unable to obtain copies of original documents. If the request is approved, the Registrar will authorize copies of such documents to be forwarded to another institution marked "copy of the original documents on file".

7.   The University routinely releases student e-mail identifiers while the student is enrolled at the University. Students who object to such release must notify the Campus Registrar.

8.   The University routinely provides, through secure on-line access a digitized image of the student identification photograph to individual instructors during the period the student is registered in the instructor's course. The Deans or their designates, Associates and Assistant Deans where specifically authorized by the Dean, the Director of the College of Extended Learning, Directors of Student Services, the Student Advocate, the Director, Associate and Assistant Directors of Residential Life, and the University's security personnel also will have access to such images. Residence Coordinators, House Dons and Associate Dons of the residence administrative team on the Fredericton campus and the Residence Academic Leader, Residence Life Coordinator and Manager of Residence and Conference Services on the Saint John campus will have access to such images during the period when a student is living within a house or residence for which the persons holding these positions are responsible. Students who object to such access to their student identification photograph should notify the Campus Registrar.

9.

a.   Deans, Associate/Assistant Deans, faculty Student Advisors and the Director of College of Extended Learning shall have unrestricted electronic access to academic student records.

b.
i.   Full-time faculty members shall have electronic access to academic student records of students registered or formally seeking registration in their courses as may be required in the performance of the faculty members' duties.

ii.   Contract Academic Instructors may be granted electronic access to academic student records of students registered or formally seeking registration in their courses if such access is required in the performance of the Instructor's duties as authorized by the Dean or Director of College of Extended Learning.

iii.   Normally, Contract Academic Instructors who are students at UNB should not have access to student academic records. Access is provided during the period the student is registered or formally seeking registration in the Instructor's course and for 45 days following the end of term in which the course is scheduled.

10.   Other Faculty and College personnel may be granted electronic access to academic student records required in the performance of their duties as authorized by the Dean or Director of the College of Extended Learning on such specific terms as the Dean or Director shall determine.

11.   Members of administrative and other academic units may be granted electronic access to academic student records required in the performance of their duties upon a request to and as authorized by the Campus Registrar or designate on such specific terms as the Registrar or designate shall determine.

Access is provided on the explicit condition that such information in the electronic academic student records shall not be released to others except as may be permitted in accordance with these regulations.

12. **a. Statistics Canada**

Statistics Canada is the national statistical agency. As such, Statistics Canada carries out hundreds of surveys each year on a wide range of matters, including education. It is essential to be able to follow students across time and institutions to understand, for example, the factors affecting enrolment demand at postsecondary institutions. The increased emphasis on accountability for public investment means that it is also important to understand 'outcomes'. In order to conduct such studies, Statistics Canada asks all colleges and universities to provide data on students and graduates. Institutions collect and provide to Statistics Canada, student identification information (student's name et student ID number), student contact information (address and telephone number), student demographic characteristics, and enrolment information. The federal Statistics Act provides the legal authority for Statistics Canada to obtain access to personal information held by educational institutions. The information may be used for statistical purposes only, and the confidentiality provisions of the Statistics Act prevent the information from being released in any way that would identify a student. Students may contact Statistics Canada via e-mail if they have any questions: statcan.PSIS-SIEP.statcan@canada.ca.

b. Maritime Provinces Higher Education Commission (MPHEC)

The MPHEC collects the data described above on behalf of Statistics Canada. In addition, it archives these data and uses them to generate basic statistics, research products, as well as the sampling frame for its university graduate survey. These activities support its mandate, which is to assist institutions and governments in enhancing the post-secondary learning environment. The legal authority for these activities is provided by the Maritime Provinces Higher Education Commission Act. The MPHEC publishes information in aggregate form so that personal information concerning any person is never revealed. The MPHEC may disclose personal information for the purpose of research, in alignment with its mandate, and as authorized the MPHEC Act. For more information, consult the MPHEC's Privacy Statement at: www.mphec.ca.

XI. Procedure for Dealing with Student Gifts

As a matter of principle, the University discourages the practice of students giving gifts to faculty members. However, from time-to-time faculty members may be presented with a gift from one or more students or an entire class that expresses appreciation. Such gifts may range from flowers to items of considerable value. In some cases the offering of a gift may reflect a cultural custom on the part of the student(s) concerned. Faculty members should use their professional judgement to decide whether or not to accept such gifts from students, and may wish to consider the following alternatives, especially when only one or two gift givers are involved:

a. Students offering gifts of money could be encouraged to make a donation to a University scholarship, bursary or prize fund, or some other University purpose. The gift could be designated "in appreciation of Professor xxxx", and sent directly, or through the faculty member's Dean, to the Development Office on the Fredericton Campus, or the Office of Advancement, Communications, and Recognition on the Saint John campus (the student would receive a tax receipt for a charitable donation).

b. Students offering gifts "in kind" which are inappropriate or have a significant monetary value could be referred to the faculty member's Dean, the Development Office on the Fredericton Campus, or the Office of Advancement, Communications, and Recognition on the Saint John campus.

c. In lieu of gifts of money or "in kind," students who wish to express thanks or appreciation to a faculty member could be encouraged to:

i. Nominate the faculty member for a Faculty or University teaching award.

ii. Write a letter of appreciation to the faculty member's Dean or the Vice-President.

iii. Send a card or note of thanks to the faculty member.

Under any circumstances, faculty members should avoid accepting gifts from students prior to submission of final grades of those student's, or completion of supervision.

XII. Academic Dress

A. GOWNS

Undergraduate:	Plain black stuff material, sleeveless.
Bachelors:	Black stuff gown falling below the knee, with full sleeves reaching to the wrist and terminating in a point.
Masters:	Black silk or stuff gown, falling below the knees, with long sleeve with semi-circular cut bottom.
Doctors:	A scarlet cloth robe, faced with silk of the same color as the lining of the hood worn.

B. UNB ACADEMIC HOODS

Each degree has its distinctive hood as follows:

Degree	Hood
BA	Black stuff bordered with white fur
BASc	Black stuff bordered with white fur and scarlet braid
BAA	Black stuff lined with ivory bordered with white fur
BAM	Black stuff lined with gold silk bordered with white fur
BPhil	Black stuff lined with dark blue bordered with white fur
JD	Pale blue bordered with white fur
BSc	Black stuff lined with scarlet bordered with white fur
BMLS and BHS	Black stuff lined with teal bordered white fur
BScEng, BScF, BScFE, BScCs, BCS, BSSwE	Black stuff lined with green bordered with white fur
BBA	Black stuff lined with light brown bordered with white fur
BScKin	Black stuff lined with claret bordered with white fur and dark green braid
BRSS	Black stuff lined with claret bordered with white fur and navy braid
BN	Black stuff lined with peach bordered with white fur
BEd	Black stuff lined with grey bordered with white fur
BIS	Black stuff lined with gold bordered with white fur
MA	Black silk lined with crimson
MPhil	Black silk lined with white bordered with light blue
MSc	Black silk lined with white bordered with scarlet
MScEng, MEng, MScF, MF, MScFE, MFE, MCS	Black silk lined with white bordered with green
MEd	Black silk lined with blue grey bordered with crimson
MASRA, MASRS, MScExSS	Black silk lined with white bordered with claret
MBA	Black silk lined with white bordered with light brown

MN	Black silk lined with white bordered with peach
MAHSR	Black silk lined with white bordered with powder blue
MIdSt	Black silk lined with white bordered with gold
PhD	Scarlet cloth with dark blue silk lining
LLD	Scarlet cloth with pale pink silk lining

DSc	Scarlet cloth with white corded silk lining
DCL	Scarlet cloth with pale blue silk lining
DLitt	Scarlet cloth with grey silk lining

GENERAL REGULATIONS ON STUDENT NON-ACADEMIC CONDUCT

The following general regulations have been approved by the Board of Governors of the University and are now in effect until such time as they may be revised by the Board.

A. The University of New Brunswick is a community of faculty, staff, students and administrators involved in teaching, learning, research and related activities. The University assumes that students come to the University for a serious purpose and accept responsibilities as members of the University community.

B. In accordance with the commitment set out in the University's Mission Statement to provide an environment conducive to the development of the whole person, all members of the University community - staff, faculty, students and administrators - have the right to work and/or study in an environment which affords them respect and dignity, and is free from danger, discrimination, harassment, intimidation, and behaviour which is destructive, disruptive or unlawful.

C. The University recognizes students' freedom to manage their personal lives, behaviour and interpersonal relations in a manner consistent with the above principles, with the laws of Canada and New Brunswick, and with University regulations. In exercising their entitlement to participate in University programs and activities, students are expected to:
1. abide by University regulations;
2. respect the integrity of University programs and activities;
3. acknowledge the diversity of the University community and freedom of all members to participate in University programs and activities;
4. promote the peaceful and safe enjoyment of the University facilities by other members of the University and public;
5. conduct themselves at all times in a manner that will reflect credit on themselves and the University.

D. The University has defined standards of student behaviour and made provisions for student discipline when they engage in conduct that is inconsistent with the foregoing principles. It shall be deemed, and the Board considers, that each of the following types of conduct is breach of University regulations, and is grounds for consideration of discipline up to and including suspension or expulsion. As the types of misconduct are stated in general terms, students are advised to familiarize themselves in greater depth with University regulations, and to consult with University officials where they have any doubt about the propriety of an intended action or behaviour. Unacceptable types of behaviour include, but are not limited to:
1. violence, harm or threat of harm to any person or the person's property;
2. unnecessarily endangering the health or safety of other persons;
3. possession of a firearm or other weapon on University premises without specific University permission;
4. acting or speaking in a disruptive, disorderly, indecent or offensive manner, or in a way that might reasonably cause fear;
5. unauthorized infringement or prevention of access by others to University classes, services, events, facilities, and property;
6. disruption or obstruction of any authorized activity, event, class or service of the University, or interference with any person's rights to carry out legitimate activities, speak or associate with others;

7. refusal to comply with a reasonable request by authorized University officials including Security and the Student Campus Police.
8. failure to provide identification to authorized University officials when asked, or providing false identification or information;
9. obstruction of Security or Student Campus Police in the performance of their duties;
10. unauthorized use or occupation of any University property;
11. conduct that results directly or indirectly in damage, misuse, defacing, or theft of University property;
12. improper use or consumption of alcoholic beverages, restricted drugs, or intoxication or impairment in a public place;
13. other conduct that is prohibited or proscribed by University rule, regulation or policy;
14. contravention of any provision of any federal, provincial or municipal, statute on University premises or while engaged in University authorized events or activities.

E. The University of New Brunswick Act provides broad authority for dealing with non-academic student conduct. For example:
1. the President has broad discretionary disciplinary powers including suspension for dealing with academic and non-academic disciplinary matters;
2. the Board of Deans has jurisdiction for matters of student discipline;
3. the Board of Governors may approve the expulsion of a student from the University;
4. the Board of Governors may make rules and regulations for the discipline of students and the imposition of fines and other penalties and sanctions; the Student Disciplinary Code and the Internal Residence Discipline Policy are examples.

F. As a general principle, the various authorities for dealing with student discipline shall be exercised so as to avoid the imposition of punishment by more than one authority for the same or an included offence.

This principle shall not preclude University authority being exercised to suspend a student from the University, or to suspend or evict a student from a University residence, pending or following the imposition of discipline, where such action is deemed to be in the best interests of the University community.

This principle is not intended to preclude a student organization from taking action against a student in accordance with its constitution and bylaws on the same facts giving rise to disciplinary action under University authority.

G. Information regarding University disciplinary regulations and procedures is available from the offices of the Director of Student Affairs and Services, the Director of Security and Traffic, the Chief of Student Campus Police, and the Commissioner of Student Discipline on the UNBF campus and from the Director of Student Services and the Manager of Safety and Security on the UNBSJ Campus.

When students believe that a member of the University community has violated the principles stated in B above in relation to them, or where students are uncertain about whether behaviour they are contemplating may violate University regulations, they should consult the Chair of their Department, or the Dean of their Faculty, or the Assistant Vice-President of Student Services (UNBF), or the Director of Student Services (UNBSJ), or the Director of Security and Traffic (UNBF), or the Manager of Safety and Security (UNBSJ), or the Chief of Student Campus Police, or the Commissioner of Student Discipline, as appropriate.

The University reserves the right to make changes, without notice, in its published rates of tuition, residence and other fees including regulations for payment thereof.

NOTE:

- Complete 2022-2023 tuition residence, and other fees are available online at:
  https://www.unb.ca/financialservices/students/undergraduate_tuition_and_fees/index.html as soon as the Board of Governors approves the schedules in the Spring of 2022.
- Fees are applicable to both Fredericton and Saint John Campuses.
- The University will waive tuition fees only for both full and part-time students that are considered by the CNIB as legally blind, upon presentation of proof to the Financial Services Office.
- For graduate fees, see School of Graduate Studies Calendar, or the Graduate School website at http://www.unb.ca/gradschl

FEE PAYMENT OPTIONS FOR UNB STUDENTS

WHEN CAN FEES BE PAID?

Payment of fees can be made at any time during the month of May, June, July, August and until September 16, 2022 for Fall Term and January 20, 2023 for Winter term. Students who have not paid or made satisfactory arrangements with Financial Services by the due date will be charged a Late Payment Fee of $75 and may have their course selections and IT services cancelled. Such students will be required to register again once fees have been paid. There is a $125 re registration fee to have you added back into your courses after payment has been made. To avoid line ups you are encouraged to settle your account as early as possible using one of the options below:

For All Students:

Credit Card:

Payment by Visa or Mastercard can be made for residence and other related fees with a convenience fee applied.

Online/Telephone Banking Through Your Financial Institution:

1. You may pay your student tuition through Online or Telephone Banking as if you are paying a utility bill:
   a. Contact your bank to ensure you are set up for online/telephone banking if you are not currently using the service.
      Add **'University of New Brunswick as a Payee'** on your payment profile
   b. Use your Student ID Number as your account number
   c. Enter the amount to be paid and the date on which you would like to pay
   d. Complete the transaction as if you are paying a utility bill
2. Online, telephone and bank teller payments take 2-3 business days to be received by the university and posted to your student account. For this reason, payment should be made in advance of the tuition payment deadline to ensure it has been processed by the tuition payment deadline.
3. If you do not pay your tuition by the deadline, your student account will be assessed a Late Payment Fee of $75 as well as an interest charge of 12% per annum.
4. Online banking is available at the following institutions: Royal Bank, BMO, CIBC, Scotia, TD/Canada Trust, HSBC, Capital, Credit Union, and others.
5. If you are having difficulties setting up your payee account, your bank will be able to assist you.
6. If you currently use a bank and University of New Brunswick is not set up as a payee, please advise us (506) 453-4624 or stufees@unb.ca. We will contact the bank for you and arrange to have UNB set up as a payee where possible.

International Payments (RECOMMENDED for International Students):

1. International students can now pay using CIBC International Student Pay.
2. This is a fast, safe, and easy way to pay.
3. To use this option, visit the following website at http://www.unb.ca/financialservices/students/paymentoptions/internationalpayments.html

Cheque / Money Order / Bank Draft:

1. Please make all payments payable to "University of New Brunswick". You **must** include student name and student number with your payment.
2. Please complete the Fee Payment form if you are mailing in a payment. This form is located at:
   http://www.unb.ca/financialservices/_resources/pdf/students-accounts/fee_payment_form.pdf
3. To send payment though regular mail to the campus where you are registered:

   Fredericton   **Saint John**
   University of New Brunswick   University of New Brunswick
   c/o Student Accounts & Receivable Services   c/o Financial Services/ Student Accounts
   Financial Services   PO Box 5050
   PO Box 4400   Saint John, NB, E2L 4L5
   Fredericton, NB, E3B 5A3

4. **To make a payment in person:**

   Fredericton   **Hours**
   Student Accounts & Receivable Services   Mon - Fri 930 – 415 (Sept 2 - May 15)
   IUC Building, 8 Bailey Drive   Mon - Fri 930 – 345 (May 19 - Sept 4)
   Fredericton, N.B.

5. Payment due in our office no later than the payment deadline.
6. Any cheque returned by the bank must be replaced by cash, certified cheque, or money order and must include payment of a $25.00 NSF charge that will be placed on the account.

In Person Debit Card/Cash:

1. If you prefer to pay in person with a debit card or cash, visit our cashiers at the above locations. Please have your student ID card with you.
2. For debit card payments, be sure to check with your bank to ensure your card has the appropriate limit in order to pay your fees. Most Financial Institutions are able to increase your daily limit temporarily.

Federal and Provincial Student Loans:

Students who apply for and are granted federal or provincial student loans can use these funds to pay their tuition and fees. For Information on how to apply for student loans, please visit the following website: http://www.canlearn.ca/eng/index.shtml

Most Provincial and Federal loans are now being processed on-line. This allows the University to electronically deduct the amount owing to the University from your loan as long as your course registration is complete. Fees will be deducted based on your course registration at the time your loan is electronically received.

If you are aware that your loan is going to be delayed for any reason, and that you may not make the payment deadline, it is your responsibility to provide proof of assessment notice confirming your funding or a down payment to the appropriate campus to avoid applicable fees and/or penalties.

Payment Arrangements:

1. UNB will consider down payment and monthly payment arrangements for those students experiencing financial difficulties.
2. All payment plans MUST be arranged by the fee payment deadlines.
3. Please visit Financial Services on either campus and speak to a cashier about setting up a payment plan. At that point, you may be referred to see a Supervisor or Financial Aid.
4. You will be required to make a down payment and sign a payment plan agreement at that time.
5. Monthly interest is charged on outstanding balances.

SECTION C: UNDERGRADUATE FEES AND FINANCIAL INFORMATION

6.   Failure to comply with payment arrangements will result in late fees being charged to the account and can result in cancellation of IT services without notice and subsequent deletion of courses.

Contacts for Questions about Fees or Payments:

Fredericton	**Saint John**
Tel: (506) 453-4624	Tel: (506) 648-5543
Fax: (506) 453-4572	Fax: (506) 648-5514
Email: stufees@unb.ca	Email: unbsjreg@unb.ca

Contacts for Financial Aid:

Fredericton	**Saint John**
Tel: (506) 453-4796	Tel: (506) 648-5543
Fax: (506) 453-5020	Fax: (506) 648-5816
Email: finaid@unb.ca	Email: rsleep@unbsj.ca
Website: www.unbf.ca/financialaid/	Website: www.unbsj.ca/prospective/finances.html

UNB FREDERICTON and SAINT JOHN Tuition and Fees 2022 – 2023

For details on the various tuition and fees for both the Fredericton and Saint John campuses, please visit the link below. Should you have any questions or concerns after viewing, please contact the Student Receivables at stufees@unb.ca or 453-4624. All due dates within this section are in relation to the 2022-2023 academic year.

https://www.unb.ca/financialservices/students/undergraduate_tuition_and_fees/index.html

Student Union Health and Dental
Health and Dental insurance is a mandatory fee unless you already have your own insurance coverage. Health and Dental Insurance opt-outs must be done online each new academic year at http://www.wespeakstudent.com/. For more information please visit their website or contact the Student Union Office at (506) 453-4955. Opt-outs must be completed by **September 23, 2022** for the fall term or **January 27, 2023** for the winter term. Additional Family Health and Family Dental can be arranged by contacting the Student Union.

International Health Insurance
It is mandatory for International Students to participate in the UNB offered International Student Emergency Health plan, including Travel Insurance. Only students who have a Medicare Card, or students who are in a mandatory Sponsored Program insurance plan can ask for an exemption of the Emergency Plan only. *The International Health Travel Insurance is a mandatory fee that cannot be opted out of and is $64.50 for the academic year payable with first term of study.   An international Health Application form must be completed each year and forwarded to Financial Services, Fredericton, IUC Physics & Administration Building, 8 Bailey Drive, Room 001. Opt-outs must be completed by **September 23, 2022** for the fall term or **January 27, 2023** for the winter term.

2021-2022 INTERNATIONAL HEALTH INSURANCE				*Travel Outside of NB*
Member Type	12 months	8 months	4 months	Yearly
Registered Student	600.00	400.00	200.00	64.50
Registered Student + 1 Family Member	1,200.00	800.00	400.00	129.00
Registered Student + 2 Family Members	1,800.00	1,200.00	600.00	193.50
Registered Student + 3 Family Members	2,400.00	1,600.00	800.00	258.00
Registered Student + 4 Family Members	3,000.00	2,000.00	1,000.00	322.50
Registered Student + 5 Family Members	3,600.00	2,400.00	1,200.00	387.00

CANADA STUDENT LOANS FOR NEW BRUNSWICK STUDENTS

Canada Student Loans for New Brunswick students will be processed online mid-August. Course registration process MUST be completed. **If a loan has not been electronically received by the payment due date, the student must provide an assessment notice and/or a down payment to avoid the Late Payment fee charge and/or losing IT Access and course deletion.**

SCHOLARSHIPS

Scholarships, awarded by the University, will be applied to the student's account as a credit, in equal amounts, by the term. Any student paying fees by the term should reduce the amount paid at Registration by half the amount of the scholarship.

- Summer Term is charged per course; please refer to the Summer Course Fees
- For financial purposes, full-time fees apply to students registered in the equivalent of four or more courses per term. Part-time fees apply to students registered in the equivalent of three or fewer courses per term. (*The Registrar's definition of these terms differ*)
- For inquiries on undergraduate fees or tuition, e-mail Student Fees or phone (506) 453-4624.

2022-2023 Residence Fees Fredericton and Saint John Campus

All residence information contained in the below link are for 2022-2023. Residence fees are due on or before September 16, 2022 for the fall term and on or before January 20, 2023 for the winter term. Should you have any questions or concerns after viewing, please contact the Student Receivables at stufees@unb.ca or 453-4624.

https://www.unb.ca/financialservices/students/residencefees/index.html

2022 – 2023 NOTES TO FEES TABLES

All dates below are the appropriate dates for the Academic year of 2022-2023. The University reserves the right to make changes, without notice, in its published rates of tuition, residence and other fees including regulations for the payment thereof.
OTHER ACADEMIC FEES

Application Fees (all faculties) – non-refundable	$65.00
Registration Confirmation Deposit – non-refundable	
Faculty of Education	$300.00
Faculty of Nursing	$250.00
All other programs	$100.00
Faculty of Law	$300.00
Late Payment Fee	$75.00
Re Registration	$125.00

Fredericton Orientation Fee (first year out of High School Students)	$80.00
Saint John Orientation Fee (first year out of High School Students)	$40.00
Challenge for Credit Examinations	25% of normal course fees
Review of Final Course Grade	$50.00
Transcript Fee	$12.00
Graduation Fee	$35.00

(Note: A deposit of $60 is required for use of graduation regalia. Upon return of the regalia, $25 is refunded.)

Tuition Fees cover all the normal costs of the University registration, libraries, creative arts, athletics and regular examinations during a full academic year. Part-time students may pay fees by the course, to a maximum of three courses per term. (See Definition of Full-time and Part-time Student below).

Definition of Full-Time and Part-time Student. Determination of a student's status as a full-time in a term will be based on the following criteria:

1. A student carrying the equivalent of four or more courses in a term is a full-time student:
2. A student carrying less than the equivalent of four courses in a term is a part-time student:

The "equivalent number of courses" carried by a student in a term is determined as follows:

   a. a term course, weighted at 0-5 credit hours, is the equivalent of one course;
   b. a term course, weighted at 6-11 credit hours, is the equivalent of two courses;
   c. a term course, weighted at 12 or more credit hours, is the equivalent of four courses;
   d. a full-year course, weighted at 0-5 credit hours, is the equivalent of one-half course in each of the two terms;
   e. a full-year course, weighted at 6-11 credit hours, is the equivalent of one course in each of the two terms;
   f. a full-year course, weighted at 12-17 credit hours, is the equivalent of two courses in each of the two terms;
   g. a full-year course, weighted at 18 or more credit hours, is the equivalent of three courses in each of the two terms;
   h. an audited course is one-half the course equivalent of the same course taken for credit.

Audit. Part-time students may audit courses with registration and payment of 50% of the undergraduate tuition and 100% of mandatory fees unless auditing with enrolment restrictions. (Where priority is given to the student wanting to take the course for credit.)

Differential Fees. Full-time students who are not Canadian citizens or landed immigrants will be required to pay a fee differential of $9469.00. Part-time non-Canadian or non-resident students must pay a fee of $947.00 per term course payable in full at registration. Students who receive landed immigrant status will have their differential fees adjusted for the term in which the landed status occurs.

Work Term Fees. Students participating in a Co-op Program or Professional Experience Program (Engineering) will be required to register and pay work term fees. Participants will be required to pay the student health insurance fee at the time of registration. The PEP work term fee and Co-op work term fee are due at the end of the second month. Payments for both work terms received after the applicable date will be subject to late fees and interest charge.

Faculty of Education Out-of-Province Internship. The Faculty of Education may make arrangements for students seeking out-of-province Field Studies practicums. Students undertaking out-of-province placements will be assessed an out-of-province intern differential fee of $500.00. Further information is available from the Chair of Student Teaching.

Application Fee. An application fee of $65.00 must accompany all applications. The fee is non-refundable.

Admission Deposit. A non-refundable confirmation deposit of ($100) in the form of a certified cheque, money order, Visa, Master Card, or American Express is payable to Admission Office, UNB, as a confirmation of acceptance. The first term tuition payment can be reduced as a result of this advance payment. The admission deposit for the Nursing Program is $250. The deposit will be forfeited if the student decides not to attend UNB, but it would be reimbursed if proof is provided that a student visa could not be obtained.

Late Payment Fee. A Late Payment Fee of $75.00 will be charged to all students who fail to pay fees or to negotiate their student loans by the published payment due dates.

Re Registration Fee. Course registrations may be cancelled if a student fails to negotiate his/her student loan or make payment arrangements by the required payment due dates. A Re Registration Fee of $125.00 will be applied to the student's account when the student's course registrations have been deleted and the student requires re-registration into their courses.

Non-Sufficient Funds (NSF) Fee. An NSF Fee $25 will apply to any cheque or financial transactions which is returned by the bank (for any reason).

Health and Accident Insurance. Students should refer to "Section D - Accommodations and Services" - of this calendar for details of available health and dental coverage.

Student Organization Fees. Full-time undergraduate students in Fredericton and Saint John will pay student association fees for 2019-2020, in the amounts of $57.50 per term and $70.00 per term respectively. Part-time students in Fredericton will be represented by ALPS (Adult Learners and Part-Time Students). The compulsory fee for all Fredericton part-time students will be $12 per term course. The compulsory fee for all Saint John part-time students will be $13.50 per term course.

Residence Fees - Fredericton The Fredericton Residence Fees include both room and dining (various dining plans including structured meals and some discretionary dining cash) and cover a period from the day the residence open in the fall and (date differs for new and returning students) until the day after the students last regularly scheduled examination in December, and from the day before classes start in January until the day after the student's last regularly scheduled examination in the spring. Residence meals are served (in one dining hall only) during holiday weekends, during the fall or winter term reading weeks, and during exam periods. There is no dining/food service between terms (i.s. Christmas break).

The University has a limited number of 1, 2 and 3 bedroom apartments restricted to full-time UNB students. All tenants are required to sign a lease, pay a damage deposit, and issue post-dated cheques for monthly rent. Interested persons should contact the Residence Administration Office, UNB, P.O. Box 4400, 20 Bailey Dr., Fredericton, NB., E3B 5A3.

Residence Fees - Saint John The Saint John Residence fees includes a declining balance food plan and covers the period from Labour Day until the day after the students last examination in December, and the day before classes start in January until the day before classes start in January until the day after the students last regularly scheduled examination in the Spring. All holidays during each term will follow the weekend hourly meal schedule. There is no meal plan food service over the Christmas Break. During March Break the students who remain in residence may continue to use their meal card during the operational hours of food service.

REGULATIONS FOR PAYMENT OF UNIVERISTY FEES

Payment of Fees: Tuition, residence, and applicable fees, are payable on Sept 16, 2022 in the Fall term and on Jan 20, 2023 in the winter term for all Fredericton and Saint John Undergraduate Students. Full Time students may pay in two instalments. When such option is exercised, refer to http://wwww.unb.ca/financialservices/students/index.html.

Late Payment Fee: A Late Payment Fee of $75 will be charged to all students who fail to pay fees or to negotiate their student loan by the published payment due dates.

Re Registration Fee: Course registrations may be cancelled if a student fails to negotiate his/her student loan or make a payment arrangements by the required payment due dates. A Re Registration Fee of $125 will be applied to the student's account when the student's course registrations have been deleted and the student requires re-registration into their courses.

Cancellation of IT Services & Courses: Registration is not complete until all fees have been paid or satisfactory arrangements have been made with Financial Services. Any student who fails to pay the required fees or to make satisfactory arrangements by the payment due dates will have his/her IT Access frozen and course selections cancelled; such students will be required to register once again once fees have been paid. The Re Registration fee of $125 will apply.

Interest on Student Accounts: Interest is calculated at an annual rate of 12.0%. Interest may be incurred any time after the due date. Interest is calculated based on the daily account balance and charged monthly.

Delinquent Account: Degrees, grades and transcripts will be withheld for students and former students who have failed to meet their financial obligations. Such students will not be permitted to register once again until all overdue accounts have been paid. At the discretion of Financial Services, delinquent student accounts will be referred to a collection agency.

Scholarships: University awards and scholarships will be applied to the student's account as a credit, in equal amounts, by the term. The full dollar value of awards and scholarships may be used by students paying the entire year's fees in the first term. Any scholarships amount greater than the fees due will be refunded upon request.

SECTION C: UNDERGRADUATE FEES AND FINANCIAL INFORMATION

Government Student Loans: Most Provincial and Federal loans are now being processed on-line. This allows the University to electronically deduct the amount owing to the University from your loan as your course registration is complete. Fees will be deducted based on your course registration at the time your loan is electronically received.

- In Fredericton, advise Financial Services in person or call (506) 453-4624
- In Saint John, advise Financial Services or Financial Aid (506) 648-5501

Students are encouraged to check their UNB student web statements regularly in order to monitor that their tuition is paid.
If a loan has not been electronically received by the fee payment due date, the student must provide an assessment notice and/or a down payment to avoid applicable late fees and/or losing IT access and course deletion.
Tax Receipts: For tax purposes, Revenue Canada Tuition and Education Credit Certificates (T2202A) will be available through the student web portal before the end of February. T2022As will only be mailed to those students who do not have an active PIN. IT access remains active for a period of one year after the last term of attended courses.

UNIVERSITY REFUND POLICY

A student who wishes to withdraw from a course(s) must do so online or notify the Registrar in writing. Ceasing to attend the lectures or notifying the instructor does not constitute official withdrawal. The effective date will be the online withdrawal date or the approved date as indicated by the Registrar. Students will be charged the appropriate pro-rated fee up to the drop date as outlined below.
Students may drop and add courses up to the last day to add the term without being charged a pro-rated fee. Courses dropped after the last day to add will be subject to pro-rated tuition fees from the first week of classes up to the withdrawal date shown on the student academic record. The Technology Fee, Facility Improvement fee and Health fee are pro-rated. All other compulsory fees are not pro-rated and are non-refundable.
For students enrolled in online courses, please be aware that refund rules vary from regular term courses due to the extra timeframe allowed to complete. For more information on OALP refunds, please visit the College of Extended Learning website at: http://extend.unb.ca/oalp/oalp_gen_info.php
The minimum administrative charge for all refunds will be $25 for full-time students and $10 per three-credit hour course, to a maximum of $25 for part-time students. There is also a $50 administration charge for wiring international funds.
Students who are funded by government student loans should be aware that dropping courses may impact loan funding. Students are advised to check with UNB Financial Aid Office or UNB Financial Services for more information.
Refunds will not be issued if the effective withdrawal date is after:
> October 22, 2021 for Fall Term courses
> February 25, 2022 for Winter Term courses
Requests for adjustments or refunds for a previous term will not be considered after September 1 of the following year.
Refunds are processed by request ONLY. To receive a refund please call (506) 453-4624 or email: stufees@unb.ca. Processing time for refunds is 2-3 weeks. Refunds are issued in the student's name regardless of who made the original payment except for where Government Student Loans are involved.
NOTE: Please refer to Summer Session calendar for relevant add/drop dates.

Date Leaving	Sep.30	Oct.31	End of Fall Term	Jan.01	Jan.31	Feb.28	End of Winter Term
Refund (% of Full Year Fees)	75%	50%	After. Nov. 15.35%	30%	15%	5%	After Mar.15 0%

REGULATIONS FOR PAYMENT OF RESIDENCE FEES

FREDERICTON

1. To reserve a room, all students will be required to pay a non-refundable $500.00 residence application fee by May 15th, by cheque, money order, MasterCard, American Express or VISA. Students who have paid their residence application fee but send written notice of cancellation to Residence Administration receive funds as follows:
2. Any student who occupies their room late for any reason, with a room reservation and the application fee paid, will be responsible for full Fall Term payment.
3. Except as in 2 above, residence fees for students moving into residence 10 or more days after the beginning of fall term will be the application fee plus the amount due on September 16, 2022 less the appropriate per diem from the 1st day to the date of occupancy. This is due in full before moving into residence.
4. Residence fees for students who enter the residence in the Fall Term and are permitted to withdraw from the residence before the beginning of the Winter Term will be responsible for the application fee plus the residence charges resulting from the Residence Refund Policy being applied as of the date of withdrawal, plus any resulting cancellation fee.
5. Residence fees for students who enter residence in the Fall Term and are permitted to withdraw from residence during the Winter Term will be the application fee plus the Fall Term residence charges plus the Winter Term residence charges resulting from the Residence Refund Policy being applied as of the date of withdrawal, plus any resulting cancellation fee.
6. Students who leave residence during either term, but who continue as students at the University, may be liable for the room rent portion of the residence fees for the remainder of their residence agreement.

SAINT JOHN

1. To reserve a room, all students will be required to pay a non-refundable deposit of $500, in the form of a certified cheque, money order, MasterCard, American Express or Visa.
2. On or before the 1st day of classes in September all students in residence will be required to pay their first term fees plus $500 advance deposit. The balance will be payable by January 20, 2023. Interest will be added to overdue accounts at the rate of 12.0% per annum or 1.00% per month.
3. The date of occupancy will normally be Labour Day. There will be no residence fee adjustments for late arrivals.
4. For students without a room reservation and advance deposit prepaid, there will be no adjustments of fees for arrivals up to 10 days after Labour Day. Residence fees for students moving into residence 11 days or more after Labour Day will be the advance deposit plus the appropriate per diem from the date of occupancy. This is due in full and payable at Financial Services/Students Accounts.
5. Residence fees for students who enter residence in the fall term and withdraw from the university before the end of the fall term will be the advance deposit plus the appropriate per diem rate from the date of occupancy to the date of withdrawal.
6. Residence fees for students who enter residence in the fall term and withdraw from university during the winter term will be the advance deposit plus the amount due in September, plus the appropriate per diem rate room the beginning of the winter term to the date of withdrawal.
7. Residence fees to students who enter residence in the fall term who request and are granted permission to leave residence at Christmas will be the advance deposit plus the amount due in September. No adjustment to the residence fee will be made. Students wanting such permission should apply in writing no later than December 1, 2022. Failure to do so will result in a $100 surcharge in addition to the above described Fall Term Residence fees if student is given permission to leave residence. Permission is usually granted if the student is required to be away from campus for a co-op work term outside the city limits, or they complete their academic program and leave the university, or they withdraw from university as well as residence.
8. Students who leave residence during either term, but who continue as students at the University, may be liable for the room rent portion of the residence fees for the remainder of the term.

GOVERNMENTAL STUDENT LOANS

Applications, for the current academic year, are available through most Provincial Student Loan Departments any time after March/April. For information on Government Student Loans please visit the following website: http://www.canlearn.ca.
For information on Government Loan Assistance for the Province of New Brunswick, please contact Student Financial Services, Department of Post-Secondary Education, Training and Labour, P.O. Box 6000, 5th Floor, TD Tower, 77 Westmorland Street, Fredericton, New Brunswick, E3B 5H1, Toll-Free: 1-800-667-5626/Fax (506)444-4333, Web site: http://www.studentaid.gnb.ca
Please contact the Fredericton Financial Aid Office by telephone at (506) 453-4796 or link to the Office website at: http://www.unbf.ca/financialaid/ to http://www.unbsj.ca/prospective/finances.html, to review resources and services.

SCHOLARSHIPS, PRIZES AND AWARDS

Regulations and General Information

All medals, prizes, scholarships and bursaries that are awarded by the University are approved by both Senates. Unless otherwise specified, awards are tenable at the Fredericton and Saint John campuses of the University of New Brunswick.

The University reserves the right not to make an award should there be no suitable candidate.

The University assumes liability for the payment of scholarships, bursaries and prizes only to the extent that gifts from donors, or returns from particular investments for these purposes, will permit. Thus, the stated values and numbers of certain awards may vary.

Since the Calendar is published a considerable time before the opening of the academic session, the University reserves the right to make whatever changes circumstances may require, including the cancellation of awards.

For a student to be eligible for undergraduate scholarships and bursaries administered by the Undergraduate Awards Office, the student must be enrolled full-time in an undergraduate degree and have completed at least 24 credit hours in the previous assessment year.

Limited scholarship support is available for students who have completed less than 24 credit hours in the previous assessment year from the College of Extended Learning for Fredericton campus students and from Financial Aid for Saint John campus students.

Scholarships are awarded by the Undergraduate Awards Office to students attending UNB to help them with the financial costs of attending university. The scholarship is paid to the recipient in the form of a credit against the student's UNB tuition and other compulsory fees. Normally, one-half of the scholarship's annual value is credited to the student's UNB fees for the Fall and Winter terms, to a maximum of two terms per year (May to April).

A student can hold an undergraduate scholarship or bursary as long as the student is registered full-time during each of the Fall and Winter terms at UNB and has given satisfactory evidence of merit. Scholarship recipients with a documented disability who are registered in a reduced course load may be considered on the recommendation of a UNB Accessibility Counsellor; such students are encouraged to contact the Undergraduate Awards Office to discuss their situation. The value of the scholarship is based on a minimum of 24 credit hours completed each year, however, the value may be prorated for scholarship recipients with a documented disability who are taking fewer than 24 credit hours per year.

If a scholarship recipient attends only one term during the year (May to April), they will receive half the annual value of the scholarship as long as they have enrolled in 12 credit hours or 4 courses during the one term.

Scholarships are awarded to international students entering UNB on the basis of a recommendation from the Registrar's Office for the admitting campus. Students who must undertake English language training before beginning their academic program may retain their scholarship while studying full-time in the English language training program.

International students who defer their Fall admission to the Winter term will have the full value of their scholarship applied to that term.

Co-op and PEP work terms qualify as eligible terms for scholarship support.

Normally, a scholarship recipient pursuing academic studies through UNB in the year (May 1 - April 30) in which the student expects to complete the requirements for an undergraduate degree, and who will not be registered full time in each of the Fall and Winter terms of that year, may be able to retain eligibility for the full amount of the scholarship if they meet all of the following

Conditions:

a) they are registered at UNB full-time in either Fall or Winter term and at least one course or at least a minimum of 3 credit hours in the other of these two terms; and,

b) the Faculty awarding the degree confirms that the student will qualify for the degree upon successful completion of the courses in which the student is registered in that year.

In the event that the award exceeds the compulsory fees for the study term, the recipient can request a refund from Financial Services.

To determine whether or not a student is in financial need, consideration is given to family income, number of dependents supported by the family income, number of dependents attending university in the upcoming year, spouse's income, number of student's dependents, student loan and/or other pertinent financial details provided by the student.

Students studying at another institution on a Letter of Permission from UNB normally are not permitted to retain their scholarship.

Students who withdraw from UNB after the refund date will retain their scholarship for the term in question, up to the tuition and compulsory fees owed by the student.

Each recipient will be notified of the terms and conditions of the award. If additional information is required, recipients are encouraged to contact the Director, Undergraduate Awards, University of New Brunswick, at (506) 453-4894 or email: awards@unb.ca .

Scholarships Open to High School Students

The University of New Brunswick provides scholarships to high school students with superior academic achievement (preference given to students who have an 80% scholarship average and above) who are admitted to a UNB undergraduate degree program on the basis of their high school marks and who have not attended another post-secondary institution prior to coming to UNB.

High school students with high averages who would like to be considered for scholarship support should submit their scholarship application by March 1st. The entrance scholarship application form covers the majority of UNB scholarships on both campuses for both domestic and international students applying to UNB directly from high school.

Information on the entrance scholarship application and how to apply can be found online at https://www.unb.ca/moneymatters/scholarships/highschool.html. On the same webpage, special application forms can be found for the Currie Undergraduate Scholarships, Beaverbrook Scholars Award and the H. Harrison McCain Bursaries.

UNB calculates a Scholarship Average which is the Admission Average plus bonus points for Grade 11 and 12 enriched courses. Bonus points are added directly to the Scholarship Average, as long as a mark of 75% or higher is achieved in the course.

- one bonus point for 1 to 3 enriched courses;
- a maximum of two bonus points for 4 to 6 enriched courses;
- a maximum of three bonus points for 7 to 9 enriched courses, and
- a maximum of four bonus points for 10 or more enriched courses.

The Scholarship Average is not rounded. The Scholarship Average may be recalculated using Grade 12 final marks, upon request provided it is received before July 15.

Renewable Scholarships (four year stated scholarships that do not fall under Renewable Opportunities)

Students holding renewable awards are expected to maintain the academic standing specified in the recipient's original awarding notification. Normally, a 3.7 scholarship grade point average is required for renewal. Failure to maintain the required grade point average will normally result in the loss of the scholarship. In exceptional circumstances, the Senate Undergraduate Scholarship Committee may consider an exemption from the academic requirement to renew the scholarship on the grounds of compassion, health or other extenuating circumstances beyond the control of the student. A student requesting such an exemption must state the grounds on which the request is based and provide documentation to support the grounds cited. A scholarship GPA is defined in the calendar under Section H. Calculation of Grade Point Averages as follows: "…for the purpose of awarding scholarships a Scholarship GPA is calculated at the end of the assessment year (May to April) provided that 24 credit hours or more have been attempted, regardless of program. For students involved in work placement programs such as Co-op or PEP, the scholarship average is calculated using the Dean's List criteria. This GPA is held internally and is not displayed on the student's transcript of record."

If an international student is enrolled full-time in English language training in the first year, they will have their scholarship renewed in the second year, as long as they have enrolled in at least one academic course in the second year.

SECTION C: SCHOLARSHIPS, PRIZES AND AWARDS

For international students who are enrolled in English language training and academic courses but have less than 24 credit hours of academic courses in one year, the scholarship grade point average will be the average of the academic courses completed in that year.

One year of a renewable scholarship may be postponed while the recipient is studying at another post-secondary institution, as long as the recipient returns to UNB as a student in an undergraduate degree program. Unless otherwise stated, renewable scholarships are awarded for a maximum of eight terms. Requests for the renewal or deferral of a renewable scholarship under other circumstances may be considered on an individual basis.

Scholarships Open to Second Entry Students

Students transferring to UNB from another post-secondary institution to complete their first undergraduate degree as well as students beginning the Bachelor of Education program on the Fredericton campus may be considered for scholarship support on the basis of their grades used for admission into their program. The scholarship application is found online at www.unb.ca/scholarships.

Students who are admitted to UNB on a basis OTHER THAN their high school marks (such as degree holders, mature students, adult learners, etc.) may be considered for scholarship support when they have completed 24 credit hours at UNB, unless otherwise specified in the scholarship description.

Scholarships Open to Continuing UNB Students

The University of New Brunswick provides scholarships to continuing UNB students who have submitted an undergraduate scholarship application by April 15, completed at least 24 credit hours of undergraduate courses at UNB in the previous year and are planning to enrol full-time in each of the fall and winter terms in the upcoming year. Preference is given to Dean's List students, or students who have at least a 3.7 Scholarship GPA, enrolled in an undergraduate degree program. Students who did not meet the scholarship course load requirements in the previous year, but plan to enrol full-time in each of the fall and winter terms in the upcoming year or students with a documented disability who are taking a reduced course load recommended by a UNB accessibility Counsellor are encouraged to contact the Undergraduate Awards Office for consideration for scholarship support. They may be considered if they have achieved at least a 3.7 GPA on their last 24 credit hours of UNB courses and plan to return to UNB in the fall.

For the purposes of awarding scholarships, a Scholarship GPA is calculated at the end of the assessment year (May to April) provided that 24 credit hours or more have been attempted, regardless of program. For students involved in work placement programs, such as Co-op or PEP, the scholarship GPA is calculated using the Dean's List criteria. For Articulated Degree students or students on an official exchange program, or letter of permission who have been away from UNB from May to April in the previous year as part of their degree program, the Scholarship GPA will be based on their most recent work at UNB. This GPA is held internally and is not displayed on the student's transcript of record.

Students currently enrolled at UNB in an undergraduate degree program who wish to be considered for scholarship support must submit the undergraduate scholarship application in myUNB each year between January 1st and April 15th.

Unless otherwise specified, the online scholarship application covers all scholarships open to continuing UNB students on both campuses awarded by the University. Successful recipients are notified during the summer.

Students Enrolled in Articulated Degree Programs

Students who begin an articulated degree program at UNB directly from high school are considered for Scholarships Open to High School Students. Students who are enrolled in articulated degree programs at UNB and attend the partnering institution (and not enrolled full-time at UNB) may be considered for scholarships as follows –

Eligibility

The student must begin the program of study at UNB.

The student must have completed at least 24 credit hours at UNB (for assessment purposes).

The student attending the partnering institution for one year (completing at least 24 credit hours or the equivalent) will be eligible for scholarship support based on the previous year's work at UNB.

If the program requires a second year of study at a partnering institution, consideration for scholarship will be given on the basis of a recommendation from the Faculty.

Upon the student's return to UNB, consideration for scholarship will be given on the basis of a recommendation from the Faculty.

Consideration will be given to the level of support by the partnering institution in the final decision of UNB scholarship support provided to the student.

Funding

These students will not be eligible to retain donor-funded scholarships for the year that they are at the partnering institution, unless the scholarship is open to the articulated degree program.

Scholarships for students who are enrolled in articulated degree programs, but attending the partnering institution (and not enrolled full-time at UNB) will be available using scholarship funds budgeted by the University, awarded using the scale approved by the Scholarship Committee each year and prorated according to the tuition paid by the student.

Donor-funded scholarships for these specific programs will be established using new monies. The scholarship description will contain a sentence indicating that, "The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution."

Students must apply to be considered for scholarship support.

Scholarships for Students who have completed fewer than 24 credit hours in the previous assessment year

Students who have completed fewer than 24 credit hours in the previous assessment year may be eligible for awards. UNB Fredericton students are encouraged to contact UNB's College of Extended Learning and UNB Saint John students are encouraged to contact Student Services for scholarship applications.

Prizes and Awards

Prizes are awarded for specific academic achievement based on the recommendation from the appropriate department or faculty. Prizes restricted to Fredericton campus students are awarded by the Undergraduate Awards Office. Prizes restricted to Saint John campus students are awarded by the Registrar's Office.

A selected group of University-level and Faculty-level prizes are presented to the recipients at Encaenia or Convocation, as appropriate. These include:

- Lieutenant-Governor's Medals
- Governor General's Academic Medal
- Governor General's Gold Medal
- Douglas Gold Medal

The presentation of the remaining prizes is at the discretion of the Faculties involved. Many Faculties organize award ceremonies to make these presentations. However, if the Faculty does not choose to present the prize at an award ceremony, the prize is sent to the recipient along with a congratulatory email. All prizes are listed in the appropriate prize ceremony bulletins. All graduation prizes are listed in the appropriate programs at either Convocation or Encaenia

Off-Campus Study Awards

The University of New Brunswick encourages international experiences for our students and provides limited support for full-time UNB students while they are studying elsewhere, within an approved program.

To be eligible for an Off-Campus Study Award, a student must be a Canadian citizen or landed immigrant who is in good academic standing at UNB. The recipient must be accepted to another university which has established a formal exchange agreement with UNB or is involved in an approved off-campus study program.

The Off-Campus Study Award is paid to the recipient in the form of a credit against the student's full-time UNB tuition and other compulsory fees for the term that the student is studying elsewhere. Once UNB tuition and compulsory fees have been paid and a balance remains available, the recipient can request a refund from Financial Services on their respective campus.

A student can retain an Off-Campus Study Award as long as they complete the off-campus study and shows satisfactory evidence of merit. In the event that a student returns before the completion of the term, the Off-Campus Study Award is removed from the student's account. The Off-Campus Study Award does not appear on the student's transcript.

The RHB McLaughlin Trust

Established through the generosity of Robert H.B. McLaughlin, long-time professor of Civil Engineering, former President of the UNB Associated Alumni and graduate of the Class of 1943, this Trust annually supports the R.H.B. McLaughlin Prize in Civil Engineering, the R.H.B. McLaughlin Graduate Fellowship in Civil Engineering, the Beaverbrook Scholars Award, and the R.H.B. McLaughlin Athletic Recognition Fund.

BURSARIES							
FACULTY	AWARD NAME	field	value	number	duration	conditions	donor
UNRESTRICTED	Agropur Dairy Cooperative Bursary	Unrestricted.	$1,000.	2.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program from Northumberland County, NB who has demonstrated successful academic performance.	Agropur Dairy Cooperative.
ARTS	Jennifer Allaby Arts Bursary	Arts.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the second year of the Bachelor of Arts degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Jennifer Allaby (BA 1990, BED 1993) and the New Brunswick University Opportunities Fund.
ENGINEERING	AOV and FSD Land Surveyors Bursary	Geodesy and Geomatics Engineering.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in the Bachelor of Science in Engeineering (Geodesy and Geomatics). The recipient must demonstrate successful academic performance.	Annis, O'Sullivan, Vollebekk Ltd. And Farley, Smith and Denis Surveying Ltd.
UNRESTRICTED	Daniel Arnold Study Abroad Off-Campus Study Award	Unrestricted.	$2,500.	1.	1 year.	Awarded to a UNB Saint John student who has completed at least two years of the degree requirements for his/her program and has been accepted into another university as a full-time student as part of an exchange program with a UNB-approved institutional partner outside of Canada. Preference will be given to students studying in Germany. Selection will be based on academic achievement, cost of living and travel expenses.	Daniel Arnold.
ARTS	Arts Undergraduate Bursary	Arts.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed the minimum requirements for the second year of the Bachelor of Arts degree and has demonstrated successful academic performance. The recipient must be a New Brunswick resident. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Roberta (BN 1976) & Tom (BBA 1976) Clark. Support has also been provided by the New Brunswick University Opportunities Fund.
UNRESTRICTED	Associated Alumnae Bursary	Unrestricted.	$500.	3.	1 year.	Awarded to full-time undergraduate female students who have dependent(s) and are experiencing financial need in relation to child care costs during the pursuit of their undergraduate degree program. Recipients must be Canadian citizens or landed immigrants, and have successfully completed a minimum of one full-time term of study at UNB with a grade point average of at least 2.0 or higher.	The Associated Alumnae.
COMPUTER SCIENCE	Tom Austin Bursary	Computer Science.	Min. $1000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program in the Faculty of Computer Science and has demonstrated successful academic performance with a GPA of 2.7 or higher.	Friends and former students of Tom Austin, Professor of Computer Science from 1970 to 1999.
EDUCATION	Bachelor of Education Bursary	Education.	$500.	Multiple.	1 year.	Awarded on the basis of financial need to full-time undergraduate students enrolled in the Bachelor of Education (11-month program) on the Fredericton campus. Recipients must have successfully completed at least one term of full-time study in the program with a GPA of 2.0 and higher.	Faculty of Education.

SECTION C: SCHOLARSHIPS, PRIZES AND AWARDS

BUSINESS ADMINISTRATION	Bamford Family Bursary	Business.	$1,000.	1.	1 year.	Awarded based on financial need to a Fredericton campus student enrolled in the Bachelor of Business Administration degree program. The recipient must be majoring in marketing and demonstrate successful academic performance.	Joe and Fatima Bamford and the Bamford family.
UNRESTRICTED	D. Charles Bird Bursary	Unrestricted.	$7,500.	Variable.	Up to 5 years.	Awarded on the basis of financial need to a student beginning an undergraduate degree program at UNB. The recipient must demonstrate successful academic performance and must be a New Brunswick resident according to the Provincial Government's Student Financial Services guidelines. Top academic performance is not a requirement but rather a student that demonstrates all around ability. The award will be given to a student who graduated from Saint John High School.	D. Charles Bird (BA 1965).
NURSING	Barbara Boyle Bursary	Nursing.	$2,500.	2.	1 year.	Awarded on the basis of financial need to students enrolled in the second or third year of the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program. Recipients must be from the Chaleur region and have demonstrated successful academic performance (minimum 3.0 GPA).	Friends of Barbara Boyle.
UNRESTRICTED	Donald Brewster Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is enrolled in an undergraduate degree program majoring in English. Preference will be given to a creative writing student. The recipient must demonstrate successful academic performance.	Stacey Rainforth in honour of Donald Brewster, WWII veteran and writer.
UNRESTRICTED	James (Jim) Butler Bursary	Unrestricted.	Min. $250.	1 or more.	1 year.	Awarded on the basis of financial need to a full-time undergraduate student on the Saint John campus who is experiencing financial difficulty in the pursuit of an undergraduate degree. Recipients must be graduates of a New Brunswick High School and have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The family of the late James Butler and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Canada-US Off-Campus Study Award	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to full-time undergraduate students at UNB, St. Thomas University, Mount Allison University or Université de Moncton who have been accepted to the Global Trade & Regional Integration Program at the Washington Center in Washington, DC and have been nominated by their home university. Recipients must be New Brunswick residents who have completed at least 60 credit hours of their undergraduate degree program and have achieved a minimum grade point average of 2.7.	Government of New Brunswick (Department of Post-Secondary Education and Training, Business New Brunswick, Intergovernmental Affairs).
UNRESTRICTED	Derek Carlisle Bursary	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to full-time undergraduate students on the Fredericton campus who are experiencing financial difficulty in the pursuit of an undergraduate degree. Recipients must be graduates of a New Brunswick High School and/or residents of the province of New Brunswick as determined by Provincial Government's Student Financial Services guidelines and have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 and higher.	Derek Carlisle, BA 1989 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Carty Family Bursary	Unrestricted.	$4,500.	1.	4 years.	Awarded based on financial need to a student who is beginning an undergraduate degree program on the Fredericton campus. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One bursary will be active in any given year.	Ken (BScF 1966), Elaine (BN 1966), William (BA 1973), Carty and Lisa (BA 2003) Carty and the New Brunswick University

50

							Opportunities Fund.
ARTS	Chalmers/Dunk Family Bursary	Sociology.	$400.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student entering their third or fourth year of study in the Bachelor of Arts degree program and majoring or honouring in Sociology. The recipient must demonstrate successful academic performance.	Lee Chalmers (Sociology faculty member, UNBSJ, 1995-2018), to honour her Chalmers/Dunk family for the value they have placed on higher education and their unwavering commitment to supporting those who seek it.
UNRESTRICTED	Deborah A. Chapman Bursary	Unrestricted.	$1,000.	1.	1 or more years.	Awarded on the basis of financial need to part-time or full-time Saint John campus students. Preference will be given to students who are middle school graduates of Hazen White or Lorne School enrolled in an undergraduate program at UNB Saint John and demonstrate successful academic performance, community service and good citizenship.	The Estate of Deborah A. Chapman.
UNRESTRICTED	Vicki Chase Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a woman student who is a single parent enrolled in an undergraduate degree program at UNB. The recipient must have demonstrated successful academic performance.	Estate of Vicki Chase
BUSINESS ADMINISTRATION	Class of 1974 Business Bursary	Business Administration.	$500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Business Administration degree program. The recipient must demonstrate successful academc performance.	Business Administration Class of 1974.
UNRESTRICTED	College Hill Daycare Co-op Bursary	Unrestricted.	$500.	1.	1 year.	Awarded to full-time undergraduate or graduate students on the Fredericton campus who have dependent(s) and are experiencing financial need in relation to child care costs during the pursuit of their degree program. Preference will be given to members of the College Hill Daycare Co-op.	Friends of College Hill Daycare Co-op.
ARTS	Peter J. Collis Bursary	Arts.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Arts degree program. The recipient must demonstrate successful academic performance. Preference will be given to a Canadian citizen or a permanent resident.	Friends & Family of Peter J. Collis, BA.
UNRESTRICTED	Copperledge Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance.	Leonard Slipp (BScCS 1983, MScCS 1985)
UNRESTRICTED	Ruth Cosman Memorial Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must demonstrate successful academic performance.	The Late Ruth Cosman.
MULTIPLE	Costco Business Administration Bursary	Business Administration.	$2,000.	1.	4 years.	Awarded on the basis of financial need to a full-time student who is enrolled in the Bachelor of Business Administration degree program on either campus. The recipient must demonstrate successful academic performance (a minimum 75% average for an entering	Costco Wholesale Canada Ltd.

						student or minimum 2.0 Grade Point Average for continuing students) and be a Canadian Citizen and New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. One bursary will be active in any given year.	
UNRESTRICTED	COVID-19 Emergency Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to students enrolled in an undergraduate degree program. Recipients must have demonstrated successful academic performance and emergency financial need need in relation to the COVID-19 crisis.	Alumni and Friends of the University of New Brunswick.
UNRESTRICTED	creditcardGenius.ca Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to an undergraduate student on the UNB Saint John campus who demonstrated successful academic performance.	Stephen (BScCS 2003 UNBSJ) and Maria (BSDA 2002 UNBSJ) Weyman, and creditcardGenius.ca.
EDUCATION	Pauline Cunningham Memorial Bursary	Education.	$4,000.	1.	1 year.	Awarded on the basis of financial need to a student from the Maritime provinces who is enrolled in the Bachelor of Education degree program on the Fredericton campus. The recipient must demonstrate successful academic performance.	Linda and Brian (PhD 1971) Brownlee.
UNRESTRICTED	CUPE 3339 Student Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a full or part-time student on the Saint John campus who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	CUPE 3339, UNB Saint John Support Staff and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Brooke DeLong Bursary	Unrestricted.	$1, 000.	1.	1 year.	Awarded based on financial need to a student who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Preference given but not limited to students studying at the Gregg Centre for War and Society or students with a connection to the Canadian Military (self or parent).	Brooke DeLong BA (Hons) 1995, Life Vice-President of UNBF Class of 1995, President of UNB Associated Alumni (2015-17), and Governor, UNB Board of Governors (2017 to present). Support was also received from the New Brunswick University Opportunities Fund.
MULTIPLE	Peter deMarsh Memorial Bursary	Science, Applied Science, Engineering.	$1,250.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the second year of the Bachelor of Science degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Roberta (BN 1976) and Tom (BBA 1976) Clark and the New Brunswick University Opportunities Fund.
MULTIPLE	Bruce Dempsey Bursary	Science, Engineering, or Computer Science.	$1,000.	1.	4 years.	Awarded to a Fredericton campus student who is beginning an undergraduate degree in any of the following faculties: Science, Computer Science, or Engineering. The applicant must be experiencing financial difficulty in the pursuit of his/her degree. The recipient must	Bruce Dempsey

						demonstrate successful academic performance. One bursary to be awarded every 4 years.	
ENGINEERING	David and Anna Edgar Bursary	Engineering.	$500.	1.	1 year.	Awarded on the basis of financial need to a student on the Fredericton campus enrolled in the Bachelor of Science in Engineering degree program. The recipient must demonstrate successful academic performance. Preference will be given to a student enrolled in Civil Engineering with a focus on transportation.	David (BSE CE 1984) and Anna Edgar.
UNRESTRICTED	Emera New Brunswick Promise Partnership Bursary	Unrestricted.	Variable.	1 or more.	1 or more years.	Awarded on the basis of financial need to students enrolled in an undergraduate degree program on a full-time basis. The recipients must have participated in the UNB Saint John Promise Partnership program. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines and demonstrate successful academic performance. Preference will be given to students who have attended the Hazen White St. Francis School.	Emera New Brunswick and the New Brunswick University Opportunities Fund.
NURSING	First Aid Medic Nursing Bursary	Nursing.	$250.	1.	1 year.	Awarded based on financial need to a Saint john campus student who is enrolled in the Bachelor of Nursing degree program. The recipient must demonstrate successful academic performance and community involvement. Preference will be given to a student whose volunteer work is related to health care.	First Aid Medic.
UNRESTRICTED	Fisher Foundation Bursary	Unrestricted.	Up to a max of $1,500.	Variable.	1 year.	Awarded on the basis of financial need to Saint John campus students, who have graduated from a New Brunswick High School, are residents of Southern New Brunswick and have completed at least the first year of an undergraduate degree program at UNB Saint John. Recipients must demonstrate successful academic performance.	The Fisher Foundation and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Ruth Anne Fordham Memorial Bursary	Unrestricted.	$250.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must demonstrate successful academic performance. Preference will be given to a single parent or, failing that ,a student who is a parent.	Anne-Drea Allison.
UNRESTRICTED	Fredericton Community Foundation Bursary	Unrestricted.	$4,000.	1.	1 year.	Awarded on the basis of financial need to a full-time student undergraduate student on the Fredericton campus who is a graduate of Harvey High School, Stanley High School, Oromocto High School, Leo Hayes High School, Fredericton High School or Ecole Ste Anne and demonstrates successful academic achievement.	The Fredericton Community Foundation.
UNRESTRICTED	Friends of UNB Saint John Off-campus Study Award	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to a UNB Saint John student who has completed at least two years of the degree requirements for his/her program and has been accepted into another university as a full-time student as part of an exchange program with a UNB-approved institutional partner outside of Canada. Selection will be based on academic achievement, cost of living and travel expenses.	Friends of UNB Saint John Student Abroad Program.

UNRESTRICTED	Kevin and Irene Fritz International Travel Award	Unrestricted.	$2,000.	1.	1 year.	Awarded to a full-time UNB student from either campus, who is enrolled in a UNB course or internship that takes place outside of Canada or has been accepted into an accredited post-secondary institution or course of study outside Canada. Selection is based on academic achievement and financial need.	Kevin (BA 1993) and Irene Kim Fritz.
NURSING	Catherine Dawn Geldart Nursing Bursary	Nursing.	$1,500.	2.	1 year.	Awarded on the basis of financial need to Saint John campus students enrolled in the Bachelor of Nursing degree program. The recipient must demonstrate successful academic performance. Preference will be given to Indigenous students.	Catherine Dawn Geldart.
SCIENCE	George Preston Gorman (BSF 1938) Bursary	Forestry or Environment & Natural Resources.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirement for the first year of the Bachelor of Science in Forestry or the Bachelor of Science in Environment and Natural Resources degree program. The recipient must demonstrate successful academic performance.	Dean (BSc 1965) and Sandra (Gorman) de Jong.
UNRESTRICTED	Tom & Lisa Gribbons Bursary	Unrestricted.	$2,000.	2.	1 year.	Awarded on the basis of financial need to a full-time Saint John campus student residing in Greater Saint John who is enrolled in an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Tom & Lisa Gribbons and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Larry & Donna Hachey Bursary	Unrestricted.	$2,000.	1.	1 year (may be renewed).	Awarded on the basis of financial need to a full-time student who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Preference will be given to students who have participated in the Promise Partnership.	Larry (BBA 1987) and Donna Hachey and the New Brunswick University Opportunities fund
COMPUTER SCIENCE	Catherine Anne Hanley-Titus Bursary	Computer Science.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in an undergraduate degree program in the Faculty of Computer Science who graduated from a high school in the city of Saint John.	Ted Titus (BA 1981, BEd 1982) in memory of his wife Catherine Anne Hanley-Titus (BScCS 1981, BEd 1982).
UNRESTRICTED	Craig S. Haynes Award for Distinguished Community Builders	Unrestricted.	$1,000.	1.	1 year.	One award, valued at $1,000, to be awarded annually on the recommendation of Student Services to a full time Saint John campus student who has completed at the least the minimum requirements for the first year. Recipients must demonstrate successful academic performance. Selection will be based on involvement in student activities, university activities and/or community activities. Consideration may be given to financial need. This award is funded by Craig S. Haynes (BA1994), former President of the Student's Representative Council of the University of New Brunswick's Saint John Campus (1992-1993).	Craig S. Haynes (BA 1994), former President of the Student's Representative Council of the University of New Brunswick's Saint John Campus (1992-1993).
SCIENCE, APPLIED SCIENCE & ENGINEERING	Health Disciplines Bursary	Nursing or Health Sciences.	$1,500.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed the minimum requirements for the second year of the Bachelor of Nursing or Bachelor of Health Sciences degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Roberta (BN 1976) & Tom Clark (BBA 1976) and the New Brunswick Universities Opportunity Fund.

NURSING, SASE	Hoyt & Spires Memorial Nursing and Health Sciences Bursary	Nursing and Health Sciences.	minimum $1,000.	1 or more.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed the minimum requirements for the second year of the Bachelor of Nursing or Bachelor of Health Sciences degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Linda Spires and the New Brunwick University Opportunities Fund.
UNRESTRICTED	International Student Bursary - Fredericton	Unrestricted.	Variable.	Variable.	1 year.	Awarded to full and part-time international undergraduate and graduate students on the Fredericton and Saint John campuses who are experiencing financial difficulty. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher.	The University.
UNRESTRICTED	International Student Bursary - Saint John	Unrestricted.	Variable.	Variable.	1 year.	Awarded to full and part-time international undergraduate and graduate students on the Fredericton and Saint John campuses who are experiencing financial difficulty. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher.	The University.
ENGINEERING	Verne M. Ireton Bursary	Engineering.	$2,000.	1.	1 year (may be renewed).	Awarded on the basis of financial need to a student who is beginning the second or third year of the Bachelor of Science in Engineering degree program who has demonstrated successful academic performance. Preference will be given to a mechanical engineering student. Consideration may be given to extracurricular activities. The bursary may be renewed if the recipient improves their scholarship GPA from the previous year.	Jonas Angus, BScME 1982, and family.
UNRESTRICTED	Irving Oil Bursary	Unrestricted.	$1,000.	Multiple.	1 year.	Awarded based on financial need to a student enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance and be a Canadian citizen or permanent resident.	Irving Oil.
MULTIPLE	Jenkins Family Bursary	Arts or Science.	Variable.	Variable.	1 year.	Bursaries have been established to provide temporary assistance to full-time undergraduate or graduate students majoring in chemistry, biology or physics who are experiencing financial difficulty in the pursuit of his/her degree. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher and be a New Brunswick resident.	Lt. Col. (U.S.A.F., Ret) Robert L. Jenkins, Mrs. Fannie W. Jenkins, and Dr. Robert T. Jenkins (MSc 1975).
UNRESTRICTED	Peter Jolly Bursary	Unrestricted.	$4,000.	3.	1 year.	Awarded on the basis of financial need to a student who is enrolled in an undergraduate degree program on the Fredericton or Saint John Campus. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Dr. Peter Jolly and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Joyce Family Foundation Access Bursaries - SJ	Unrestricted.	$5,000.	Multiple.	4 years.	Awarded on the basis of financial need to students who have graduated from a secondary high school within the last 12 months and are beginning an undergraduate degree program. Preference will be given to residents of New Brunswick and then Atlantic Canada. The recipients must demonstrate successful academic performance and commit to work with at least one mentor in an extracurricular activity throughout their program of study. The recipient may retain this bursary while enrolled in a UNB articulated degree program and attending the partnering institution.	The Joyce Family Foundation.

UNRESTRICTED	Joyce Family Foundation Access Bursaries - FR	Unrestricted.	$5,000.	Multiple.	4 years.	Awarded on the basis of financial need to students who have graduated from a secondary high school within the last 12 months and are beginning an undergraduate degree program. Preference will be given to residents of New Brunswick and then Atlantic Canada. The recipients must demonstrate successful academic performance and commit to work with at least one mentor in an extracurricular activity throughout their program of study. The recipient may retain this bursary while enrolled in a UNB articulated degree program and attending the partnering institution.	The Joyce Family Foundation.
EDUCATION	Joan A. (Lelacheur) Kennedy Bursary	Education.	$2,000.	1.	1 year.	Awarded to a student who is enrolled in the Faculty of Education at UNB Fredericton. Applicant must be a full-time undergraduate student who is experiencing financial difficulty in the pursuit of his/her degree. Recipient must have successfully completed at least one year of full-time study at UNB with a GPA of 2.0 and higher. Preference will be given to First Nations students. If there is no qualified recipient, the bursary may be awarded to a graduate of a New Brunswick high school.	Geoffrey L. Kennedy.
ENGINEERING	Thomas F. Kennedy Bursary	Engineering.	$2,000.	1.	1 year.	Awarded to a student who is enrolled in the Faculty of Engineering at UNB Fredericton. Applicant must be a full-time undergraduate student who is experiencing financial difficulty in the pursuit of his/her degree. Recipient must have successfully completed at least one year of full-time study at UNB with a GPA of 2.0 or higher. Preference will be given to students from Africa. If there is no qualified recipient, the bursary may be awarded to a graduate of a New Brunswick high school.	Geoffrey L. Kennedy.
UNRESTRICTED	Peter C. Kent Travel Study Award	Unrestricted.	Up to $5,000.	1 or more.	Summer term.	Awarded to a full-time UNB student, from either campus, who is enrolled in a UNB course or internship that takes place outside of Canada or has been accepted into an accredited post-secondary institution or course of study outside Canada. Preference is to be given to the students intending to apply for the Rome Program offered by the Faculties of Arts. Applicants will not be expected to have applied to the Rome Program before applying for this award. Selection is based on academic achievement and financial need. The Selection Committee will conduct interviews of the leading candidates before deciding who is to receive the scholarship.	Dr. William S. Lewis and the University of New Brunswick.
UNRESTRICTED	Killam American Fund Bursary	Unrestricted.	Min. $1,000.	1 or more.	1 year.	Awarded to full-time undergraduate students on any campus of the University of New Brunswick who are experiencing financial difficulty in the pursuit of their degree program. Recipients must be residents of the United States of America as determined by state residency guidelines, and have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher.	Established in memory of Izaak Walton Killam of Nova Scotia by his Massachusetts sisters through their testamentary trusts.
UNRESTRICTED	Killam Apartment REIT Bursary for Books	Unrestricted.	$500.	Variable.	1 year.	Awarded to full-time undergraduate students on the Fredericton campus who are experiencing financial difficulty, to help with the purchase of text books. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher.	Killam Properties
UNRESTRICTED	David Malcolm King Memorial Bursary	Unrestricted.	$750.	1.	1 year.	Awarded on the basis of financial need to a full time mature student who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Preference will be given to students who have participated	Family and friends of the late David King and the New Brunswick University Opportunities Fund.

						in the Promise Partnership. The awarding of the bursary will alternate each year between the Fredericton and Saint John campuses.	
BUSINESS ADMINISTRATION	Langille Bursary	Business.	$2,000.	2.	1 year.	Awarded based on financial need to Saint John campus students enrolled in the Bachelor of Business Administration degree who have completed at least the minimum requirements for the first year of their Business Administration degree. The recipients must demonstrate successful academic performance.	Anonymous.
UNRESTRICTED	Oscar Z. LeBlanc Memorial Bursaries	Unrestricted.	Approx. $2,000.	3 Fredericton Campus, 1 Saint John Campus.	1 year.	Four bursaries have been established to assist full-time undergraduate students who are experiencing financial difficulty in the pursuit of his/her undergraduate degree program. Recipients must be graduates of a New Brunswick high school and/or are residents of the province of New Brunswick, as determined by provincial Student Aid guidelines, and have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher.	The late Oscar Z. LeBlanc and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Robert C. Love Memorial Bursary	Unrestricted.	$2,500.	2.	1 year.	Awarded on the basis of financial need to a Saint John campus full-time student who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance. Preference will be given to students who have participated in the Promise Partnership.	Brian Love (BBA 1990 & LLB 1993).
FORESTRY	C.D. MacCall Bursary	Forestry.	$1,000.	1.	1 year.	Awarded based on financial need to a student enrolled in the Bachelor of Science in Forestry degree program. The recipient must demonstrate successful academic performance.	C.D. (Bud) MacCall.
UNRESTRICTED	Dr. Colin B. Mackay Bursary	Unrestricted.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to Saint John campus students who demonstrate successful academic achievement. Part-time, full-time, graduate or undergraduate students are eligible to apply.	The estate of Dr. Colin B. Mackay, BA' 42, LLD '55, President of UNB, 1953-1969, President Emeritus 1978-2003.
UNRESTRICTED	Robert Banting Carson Manzer, BA 1988 Memorial Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program on the Saint John campus. The recipient must have completed at least the minimum requirements for the first year of their undergraduate degree program and demonstrate successful academic performance. The recipient must also be a mature student. Preference will be given to a student majoring in History or Political Science.	Alison (Manzer) Flood, BBA 1989 and David Flood, BBA 1992.
UNRESTRICTED	Janet M. Martin Bursary	Unrestricted.	Min. $2,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled full-time in an undergraduate degree or graduate program. The recipient must demonstrate successful academic performance.	Andrew B. and Janet M. (BBA 1978, BA 1981) Martin.
EDUCATION	Paul Martin B.Ed. Bursary	Education.	$500.	3.	1 year.	Three $500.00 bursaries have been established to assist full-time Fredericton campus students who are experiencing financial difficulty. Eligible candidates must be enrolled in the 11 month K-12 B.Ed. program and are a First Nation, Metis or an Innu community member.	John and Judy Bragg Family Foundation
UNRESTRICTED	Barbara Mayes Bursary	Unrestricted.	Minimum $1,000.	1 or more.	1 year.	Awarded on the basis of financial need to Saint John campus students enrolled in an undergraduate degree program. The recipients must demonstrate successful academic performance. Preference will be given to students who have participated in the UNB Saint John Promise Partnership program.	Estate of Kirk Mayes.

UNRESTRICTED	Dr. Mary McCarthy-Brandt Bursary	Unrestricted.	$500.	1.	1 year.	Awarded based on financial need to a Black student on the Fredericton campus who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance.	Black Lives Matter - Fredericton
SCIENCE	Dean W. McDonald Bursary	Earth Sciences.	$5,000.	4.	1 year.	Awarded on the basis of financial need to full-time undergraduate or graduate students whose main area of studies is Earth Sciences. The recipients must demonstrate successful academic performance.	Dr. Dean W. McDonald, M.Sc. Geol. 1984.
MULTIPLE	McHugh Memorial Bursary	Nursing.	Min. $1,000.	1.	1 year.	Awarded on the basis of financial need to a student entering or enrolled in the Bachelor of Nursing degree program who has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to a student from Charlotte County.	Marilyn J. Matthews (BT 1972, BA 1976). Support has also been provided by the New Brunswick University Opportunities Fund.
ENGINEERING	Gwyn Morgan 'Be An Engineer' Bursary	Engineering.	$5,000.	1.	1 year.	Awarded to a second year engineering student at UNB Fredericton. Applicants must be full-time undergraduate students who are experiencing financial difficulty in the pursuit of his/her engineering degree. Recipients must have successfully completed at least one year of full-time study at UNB with a GPA of 2.0 and higher.	The Gwyn Morgan and Patricia Trottier Foundation
UNRESTRICTED	New Brunswick Residence Co-operative (NBRC) Bursary	Unrestricted.	$4,000.	1.	1 year.	A $4,000.00 bursary has been established to assist a full-time Fredericton campus student who is experiencing financial difficulty in the pursuit of his/her undergraduate degree program. Eligible candidates must be living independently and not in residence at the University of New Brunswick (UNB). The recipient must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher and must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to a student who is a child of the NBRC alumnus/-a who is pursuing an undergraduate degree.	New Brunswick Residence Co-operative (NBRC) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	New Brunswick Residence Co-operative (NBRC) Emergency Bursary	Unrestricted.	$1,000.	1.	1 year.	A $1,000.00 bursary has been established to assist a full-time Fredericton campus student enrolled in an undergraduate degree program who is experiencing financial difficulty with living costs due to fire, flood and/or any other disaster. Eligible candidates must be living independently and not in residence at the University of New Brunswick (UNB). The recipient must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 or higher and must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to a student who is a child of an NBRC alumnus/-a who is pursuing an undergraduate degree.	New Brunswick Residence Co-operative (NBRC) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Terry Nikkel Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a student who has completed at least 60 credit hours in an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services guidelines. The awarding of the bursary will alternate each year between the Fredericton and Saint John campuses.	Terry Nikkel and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Colin Noel Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to a student on the Fredericton campus who has completed at least the minimum requirements for the first year of an	The Colin Noel Foundation

						undergraduate degree program and exhibit dedication and determination, living with a medical impairment or disability. The recipient must be a New Brunswick resident and have demonstrated successful academic performance.	
NURSING	Nurses Association of New Brunswick Bursary Fredericton	Nursing.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Nursing degree program. The recipient must have completed at least the minimum requirements for the second year and demonstrate successful academic performance. Preference will be given to an Indigenous student who has completed at least the minimum requirements for the third year or a student who entered the program through the LPN-BN Nursing pathway.	Nurses Association of New Brunswick.
NURSING	Nurses Association of New Brunswick Bursary Moncton	Nursing.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a student enrolled in the Bachelor of Nursing Advance Standing degree program. The recipient must demonstrate successful academic performance. Preference will be given to an Indigenous student.	Nurses Association of New Brunswick.
NURSING	Nurses Association of New Brunswick Bursary Saint John	Nursing.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a Saint John campus student enrolled in the Bachelor of Nursing degree program. The recipient must have completed at least the minimum requirements for the second year and demonstrate successful academic performance. Preference will be given to an Indigenous student who has completed at least the minimum requirements for the third year or a student who entered the program through the LPN Bridge Program.	Nurses Association of New Brunswick.
NURSING	Nursing Clinical Placement Travel Bursary	Nursing.	$225.	8.	1 year.	Awarded on the basis of financial need to Canadian and international Nursing students completing clinical placement enrolled in an undergraduate or graduate degree program on the Fredericton, Moncton, or Saint John campus. This bursary is open to students enrolled in full-time and part-time studies. The recipients must demonsrate successful academic performance.	Carole Peacock BA '65.
UNRESTRICTED	Albany & Elma Palmer Bursary	Unrestricted.	$1,800.	1.	1 year (may be renewed).	Awarded on the basis of financial need to a full-time student on the Saint John campus who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	The Palmer Family and the New Brunswick University Opportunities Fund.
SASE	Crystal Lee Palmer Bursary	Nursing.	$1000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program. The recipient must demonstrate successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family and friends of Crystal Lee Palmer (BNRN 2005) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Paul & Patricia Paré Bursary	Unrestricted.	$2,000.	1.	1 year (may be renewed).	Awarded on the basis of financial need to a full-time student who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Preference will be given to students who have participated in the Promise Partnership.	The Palmer Family and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Eleanor Parke Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to a mature student entering an undergraduate degree program on the Saint John campus. The recipient must demonstrate successful academic performance. This bursary is open to part-time and full-time students.	Eleanor Parke, BA 1979.
COMPUTER SCIENCE	Stephen Peppin Memorial Bursary	Computer Science.	$3,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is enrolled in a degree program in the Faculty of Computer Science. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services Guidelines.	Mrs. Audrey Knowles and the Peppin Family along with the New Brunswick University Opportunities Fund.
ARTS	Picaroons Bursary	History.	Up to $1,000.	Variable.	1 year.	Awarded based on financial need to a Fredericton campus undergraduate student majoring in history. The recipient must demonstrate successful academic performance.	Picaroons Traditional Ales
NURSING	Rowena Ramsay Family Bursary	Nursing.	$1,500.	2.	1 year.	Awarded based on financial need to Saint John campus students who have completed the LPN bridge program and are enrolled in the Bachelor of Nursing degree program. The recipients must demonstrate successful academic performance.	Fred Ramsay.
RENAISSANCE COLLEGE	Renaissance College International Internship Bursary	Leadership Studies.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to students enrolled in the Bachelor of Philosophy in Leadership Studies. The award is to be held during the student's international internship. The recipient must demonstrate successful academic achievement.	Friends of Renaissance College.
RENAISSANCE COLLEGE	Renaissance College Domestic Internship Bursary	Leadership Studies.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to students enrolled in the Bachelor of Philosophy in Leadership Studies. The award is to be held during the student's domestic internship. The recipient must demonstrate successful academic achievement.	Friends of Renaissance College.
HEALTH	Riegger Bachelor of Health Bursary	Health.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a student who is enrolled in the Bachelor of Health degree program on the Saint John campus. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines and demonstrate successful academic performance.	Sachiko Riegger and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Mary Rioux Bursary	Unrestricted.	$400.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student in an undergraduate degree program with preference to entering students. The recipient must demonstrate successful academic performance and live in residence.	Stephen (BSE CE 1982) and Sherry (BEd 1981) Rioux in honour of Mary Rioux, a long-time employee of UNB's Residence Services.
UNRESTRICTED	Cedric Ritchie Scotiabank International Study Awards	Unrestricted.	Up to $5,000.	1 or more.	1 year.	Open to full-time undergraduate and graduate students in any discipline, from any UNB campus. Recipients must show promise of becoming the leaders of tomorrow in their chosen field, demonstrate they have either been accepted into an accredited post-secondary institution or course of study outside Canada, or alternatively, be enrolled in a UNB course or internship that takes place outside of Canada. Preference will be given to students studying in countries where Scotiabank has a presence. They must also articulate the benefits of international study not only to themselves but to Canada and society generally. Recipients must be citizens or permanent residents of Canada. Upon return from the time abroad,	Scotiabank.

						students will be required to file a comprehensive budget and a report on the activities undertaken while away. Students may be asked to make a public presentation on their experiences and/or to mentor others who will be taking up a Cedric Ritchie Scotiabank International Study Award in the years following.	
UNRESTRICTED	Bernardo & Giovanna Rocca Bursary	Unrestricted.	$2,000.	2.	1 year.	Awarded on the basis of financial need to a female student who is a single parent enrolled in an undergraduate degree program on the Saint John campus. The recipient must have demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Mr. Bernardo Rocca, members of the Rocca family and friends, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	John and Gail Rocca Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a full-time student who is experiencing financial difficulty in the pursuit of an undergraduate degree program on the Saint John campus. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services guidelines and demonstrate successful academic achievement.	John and Gail Rocca and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Brian Rosborough, BBA 1980 Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must have addressed challenging circumstances such as single parent family/household, low income and/or overcome financial/personal obstacles. The recipient must demonstrate successful academic performance and be a New Brunswick resident.	Brian Rosborough, BBA 1980.
NURSING	Rosemary's Bursary for Nursing Students	Nursing.	$3,000.	2.	1 year.	This bursary will support nursing students at UNB Fredericton in any year of study. Students must be full-time undergraduate students who are experiencing financial difficulty in the pursuit of his/her nursing degree. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 and higher.	Established in 2016-17 by Rosemary McCain-McMillin through the Fredericton Community Foundation.
ARTS	Runcie Family Co-op Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student enrolled in the co-op program within the Faculty of Arts. The bursary is to be held during the recipients co-op placement. The recipient must demonstrate successful academic performance.	John (BA 2012) & Laura (BN 2013) Runcie.
UNRESTRICTED	Joan K. & Royden D. Ryan Memorial Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic achievement. The recipient must be a mature student with preference given to a single parent. The recipient must also be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Darlene and Patrick Ryan and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Saint John College Development Inc. Bursary	Unrestricted.	$1,250.	1 or more.	1 or more years.	Awarded on the basis of financial need to a full-time Saint John campus student who is a graduate of Harbour View High School, St. Malachy's Memorial High School or Saint John High School enrolled in an undergraduate program and demonstrates successful academic performance. Preference will be to students who attended Hazen White St. Francis School or Lorne Middle School and participated in the Promise Partnership Program.	SJ College Development Inc. and the New Brunswick Opportunities Fund.

UNRESTRICTED	Saputo Off-campus Study Award	Unrestricted.	Min. $500.	1 or more.	1 year.	Awarded to a UNB Saint John student who has completed at least two years of the degree requirements for his/her program and has been accepted into another university as a full-time student as part of an exchange program with a UNB-approved institutional partner outside of Canada. Selection will be based on academic achievement, cost of living and travel expenses. Preference will be given to a student enrolled in the Bachelor of Business Administration degree program.	Saputo Inc.
UNRESTRICTED	Saputo Student Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a full-time student on the Saint John campus who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Saputo and the New Brunswick University Opportunities Fund.
NURSING	Virginia "Ginny" Shaw Memorial Bursary	Nursing.	$400.	1.	4 years.	Awarded on the basis of financial need to a Saint John campus student entering the Bachelor of Nursing degree program. The recipient must demonstrate successful academic performance.	
BUSINESS ADMINISTRATION	Marie E. Shipley Bursary in Business	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a full-time or part-time Saint John campus female student. Preference will be given to a mature female student who is enrolled in the Bachelor or Master of Business Administration degree program. The recipient must demonstrate successful academic performance.	David and Hannah Shipley.
UNRESTRICTED	Hazel and Ottie Sidwell Bursary	Unrestricted.	$3,000.	1.	1 year.	Awarded based on financial need to a student enrolled in an undergraduate degree program on the Fredericton campus, who demonstrates successful academic and athletic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Estate of Keith Sidwell {BSc. Geology 1947) member of the New Brunswick Sports Hall of Fame, 1945 UNB Basketball, Canadian Champions, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Sisters of Charity Student Bursary	Unrestricted.	$4,000.	1.	1 year.	Awarded based on financial need to a Saint John campus student enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance. Preference will be given to a student who has recently immigrated to Canada.	Sisters of Charity.
FORESTRY	Alfred Smith Bursary in Forestry	Forestry.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Science in Forestry. The recipient must demonstrate successful academic performance.	Family of Alfred Smith.
UNRESTRICTED	Dr. Florence Snodgrass Bursary Fund for New Brunswick Students	Unrestricted.	Up to $2,500.	Multiple.	1 year.	Awarded on the basis of financial need to full-time undergraduate students on the Fredericton campus who demonstrate successful academic achievement. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines.	Dr. Florence Snodgrass (BA 1924).

UNRESTRICTED	Dr. Stanley T. Spicer Bursary	Unrestricted.	$4,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance.	Linda B. (Spicer) MacDonald (BPE 1970)
UNRESTRICTED	SRC Student Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to part-time students enrolled in an undergraduate degree or certificate program on the Saint John campus. Students must demonstrate successful academic performance.	
ENGINEERING	Reginald F. Staples Memorial Engineering Horizon Bursary	Engineering.	$1,000.	2.	1 year.	Awarded to full-time undergraduate engineering students based on financial need. Recipients must be accepted into an accredited post-secondary institution or course of study outside New Brunswick, or alternatively, be enrolled in a UNB course, co-op program or internship that takes place outside of New Brunswick. Recipients must demonstrate successful academic performance. Preference will be given to students from New Brunswick, then Atlantic Canada, then the rest of Canada.	The family of Reginald (Class of 1953, MIT 1954) and Patricia (BA 1953) Staples.
UNRESTRICTED	TD Bank Financial Group Bursary	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to full-time undergraduate students experiencing financial need in the pursuit of their degree program. Recipients must be Canadian citizens or landed immigrants, and have successfully completed a minimum of one full-time term of study at UNB with a grade point average of at least 2.0 or higher.	TD Bank Financial Group.
UNRESTRICTED	TD Insurance Indigenous Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded based on financial need to part-time or full-time, undergraduate or graduate Indigenous students. The recipient must demonstrate successful academic performance.	TD Insurance.
UNRESTRICTED	UNB Associated Alumni Bursary	Unrestricted.	Variable.	Multiple.	1 year.	A number of bursaries have been established to assist full-time undergraduate students who are experiencing financial difficulty in the pursuit of his/her undergraduate degree program. Recipients must have successfully completed at least one term of full-time study at UNB with a GPA of 2.0 and higher.	UNB Associated Alumni.
UNRESTRICTED	UNB Atlantic Promise Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded based on financial need to Indigenous or Black students enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance.	Friends of the University of New Brunswick.
BUSINESS ADMINISTRATION / MANAGEMENT	UNB Atlantic Promise Bursary in Business	Business and Management.	Variable.	Variable.	1 year.	Awarded based on financial need to Indigenous or Black students enrolled in the Bachelor of Business Administration degree program. The recipient must demonstrate successful academic performance.	Friends of the University of New Brunswick.
UNRESTRICTED	UNB Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to Canadian and international students enrolled in an undergraduate or graduate degree program. This bursary is open to students enrolled in full-time and part-time studies. The recipients must demonstrate successful academic performance.	Friends of the University of New Brunswick.
UNRESTRICTED	UNB Faculties of Arts Travel Study Program Award	Unrestricted.	$3,000.	Multiple.	1 year.	Awarded to students who are enrolled in their first undergraduate degree program, are attending UNB Fredericton or UNB Saint John on a full-time basis, according to the definition used by the Government of Canada, and have completed at least one term of study at UNB or in another university. Both domestic and international students are eligible; however, preference will be given to Canadian citizens and permanent residents. Selection will be based on academic achievement. Consideration may be given to financial need and the demonstration of interest in participating in the Travel Study Program. When completing the online application form, students are required to submit a name	The University.

						of one faculty member, from whom a reference may be requested, along with a letter of no more than 500 words explaining how s/he would benefit from the Travel Study Program Award. Recipients must take the Travel Study course for credit and use the award for the Travel Study Program taking place in the next Summer Session; the award will not be deferred. Preference will be given to first-time applicants.	
UNRESTRICTED	UNB Faculties of Arts Travel Study Program Bursary	Unrestricted.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to students who are enrolled in their first undergraduate degree program, are attending UNB Fredericton or UNB Saint John on a full-time basis, according to the definition used by the Government of Canada, and have completed at least one term of study at UNB or in another university. Both domestic and international students are eligible; however, preference will be given to Canadian citizens and permanent residents. Recipients must demonstrate successful academic performance and use the award for the Travel Study Program taking place in the next Summer Session; the award will not be deferred.	The University.
UNRESTRICTED	UNB Fredericton Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to Canadian and international students enrolled in an undergraduate or graduate degree program on the Fredericton campus. This bursary is open to students enrolled in full-time and part-time studies.	Friends of the University of New Brunswick.
UNRESTRICTED	UNB Fredericton Off-campus Study Award	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to UNB Fredericton full-time students who have been accepted into another university as part of an exchange program outside Canada with a UNB-approved institutional partner. Selection will be based on academic achievement and financial need.	
UNRESTRICTED	UNB Fredericton Student Union Bursary	Unrestricted.	Min. $500.	Variable.	1 year.	Awarded based on financial need to full-time Fredericton campus undergraduate students who have experienced unforeseen hardships and/or financial burdens. The recipients must be Student Union members and demonstrate successful academic performance.	UNB Fredericton Students.
UNRESTRICTED	UNB Saint John Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to Canadian and international students enrolled in an undergraduate or graduate degree program on the Fredericton campus. This bursary is open to students enrolled in full-time and part-time studies.	Friends of the University of New Brunswick
UNRESTRICTED	UNB Saint John Student Abroad Off-campus Study Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a UNB Saint John student who has completed at least two years of the degree requirements for his/her program and has been accepted into another university as a full-time student as part of an exchange program with a UNB-approved institutional partner outside of Canada. Selection will be based on academic achievement, cost of living and travel expenses.	Student Abroad Office, UNB Saint John.
UNRESTRICTED	UNBF Residence Emergency Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to Fredericton campus students enrolled full-time in an undergraduate degree program. Recipients must have demonstrated successful academic performance and emergency financial need in terms of housing.	Residence Life, UNB Fredericton.
ARTS	UNBSJ Communications Studies Bursary	Communications.	Min. $2,000.	At least 1.	1 year.	Awarded on the basis of financial need to a Saint John campus student enrolled in the Bachelor of Arts. The recipient must have declared a major or double-major in Communication Studies and demonstrated successful academic performance (min. 3.0 GPA). Preference will be given to students entering third year. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Communication Studies Faculty and the New Brunswick University Opportunities Fund.

UNRESTRICTED	UNBSJ Student Bursary	Unrestricted.	$1,500.	1 or more.	1 or more years.	Awarded on the basis of financial need to Saint John campus students enrolled in an undergraduate degree program on a full time basis. The recipients must demonstrate successful academic performance. Preference will be given to students who have participated in the UNB Saint John Promise Partnership's High School Tutoring program. The recipients must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	UNBSJ Retired Faculty Member and the New Brunswick Univeristy Opportunities Fund.
UNRESTRICTED	Margaret Walker Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of a degree program and has demonstrated successful academic performance with a gpa of 2.0 or higher.	Family of Margaret Walker.
MULTIPLE	Sofia Walmark, BA 2018 Bursary	Arts or Science.	$500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in an undergraduate degree in the Faculty of Arts or Science. The recipient must be majoring in Psychology and demonstrate successful academic performance.	Sofia Walmark, BA 2018.
UNRESTRICTED	J.B. Ward Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded based on financial need to a student enrolled in an undergraduate degree program. Preference will be given to an Indigenous or racialized student. The recipient must demonstrate successful academic performance.	J. Bruce Ward (BScEE 1973, MScCS 1979).
NURSING	Rena Watson Nursing Bursary	Nursing.	$3,000.	2.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed the requirements for the first year of the Bachelor of Nursing degree and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Mrs. Rena and Dr. Mackenzie Watson and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Jordyn Weddell Spotlight Bursary	Unrestricted.	$500.	1.	1 year.	Awarded based on financial need to a student enrolled in an undergraduate degree program on the Fredericton campus. Students must demonstrate successful academic performance and a passion for progressing mental health initiatives in the community and/or campus.	Jordyn Weddell.
MANAGEMENT	Christopher K. Wilson International Study Award	Business.	$1,000.	1.	1 year.	Awarded to a full-time student on the Fredericton campus in the Bachelor of Business Administration degree program who is enrolled in a UNB course or internship that takes place outside of Canada or has been accepted into an accredited post-secondary institution or course of study outside Canada. Selection is based on academic achievement and financial need.	Mr. Christopher K. Wilson, BBA 2002.
ENGINEERING	Women in Engineering Bursary	Engineering.	$500.	2.	1 year.	Awarded based on financial need to women students who are entering the first year of the Bachelor of Science in Engineering degree program on the Fredericton campus. The recipients must demonstrate successful academic performance and have graduated from a New Brunswick high school.	UNB Diversity within Engineering Society.
MULTIPLE	Robert (Bob) Young & Pat Neill Bursary	Business Administration or Arts.	$2,000.	2.	1 year.	Awarded on the basis of financial need to a student who has successfully completed two years of the Bachelor of Business Administration or Bachelor of Arts degree program on the Saint John campus. The recipient must have demonstrated successful academic performance and must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Robert Young & Pat Neill and the New Brunswick University Opportunities Fund.
SCHOLARSHIPS FOR HIGH SCHOOL STUDENTS							

FACULTY	AWARD NAME	field	value	number	duration	conditions	donor
UNRESTRICTED	2002 Graduating Class Scholarship	Unrestricted.	$500.	1 or more.	1 year.	Awarded to a Fredericton campus student entering an undergraduate degree program directly from high school. Selection is made on the basis of scholastic attainment, financial need and involvement in extracurricular activities.	Class of 2002.
FORESTRY	75th Anniversary Scholarship in Forestry	Forestry or Forest Engineering.	Approx. $2,200.	1.	1 year.	Awarded to a student beginning an undergraduate degree program in Forestry or Forest Engineering who has graduated from high school with a high academic standing and who has demonstrated scholastic achievement in math and science.	Alumni of the Faculty of Forestry and Environmental Management.
COMPUTER SCIENCE	Accreon Entrance Scholarship	Computer Science.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student beginning an undergraduate degree program in the Faculty of Computer Science. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Selection will be based on academic achievement and financial need. Preference is given to a student who does not hold other scholarships.	Accreon and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Lady Vi Aitken Scholarship	Unrestricted.	$10,000.	1.	4 years.	Awarded to a top international student who is beginning an undergraduate degree program. Selection is based on academic achievement. Consderation may be given to involvement in extracurricular activities.	Beaverbrook Canadian Foundation.
UNRESTRICTED	Alumnae Entrance Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Women students beginning an undergraduate degree program. Selections are made on the basis of scholastic attainment and financial need.	Associated Alumnae.
UNRESTRICTED	Alumni Entrance Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Students beginning an undergraduate degree program. Awarded primarily on the basis of scholastic attainment. Financial need may be considered.	Associated Alumni.
FORESTRY	Ian MacKay Anderson & Family Scholarship	Forestry.	$3,000.	1.	4 years.	Awarded to a Fredericton campus student who is beginning an undergraduate degree program in the Faculty of Forestry directly upon graduation from a high school. Preference will be given to a student who is a graduate of a high school in Northumberland County, New Brunswick. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Stephanie Anderson (BSC 1984), in honour of her father, and the New Brunswick University Opportunities Fund.
SCIENCE	Stephanie Anderson Scholarship	Science.	$3,000.	1.	4 years.	Awarded to a student who is a graduate of Miramichi Valley High School and is beginning the Bachelor of Science degree program on the Fredericton campus. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One scholarship to be awarded every four years.	Stephanie Anderson, BSc 1984, and the New Brunswick University Opportunities Fund.
ENGINEERING & SASE	APEGNB Entrance Scholarship	Engineering.	$5,000.	2 or more.	1 year.	Open to students entering the Engineering or Geoscience degree program directly from a New Brunswick high school. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selections are made on the basis of scholastic attainment and financial need.	The Association of Professional Engineers and Geoscientists of New Brunswick Foundation for Education and the New Brunswick University Opportunities Fund.

SCIENCE, APPLIED SCIENCE & ENGINEERING	APEGNB Saint John Branch Scholarship	Engineering.	$500.	5 or more.	1 year.	Open to Saint John campus students entering the Engineering degree program directly from a high school within in the APEGNB Saint John Branch district, who has not received another major award. Selections are made on the basis of scholastic attainment and financial need.	The Association of Professional Engineers and Geoscientists of New Brunswick - Saint John Branch and the New Brunswick University Opportunities Fund.
MULTIPLE	Joseph G. Azar Scholarship	Engineering or Computer Science.	Approx. $4,000.	1.	4 years.	Awarded to a student who would otherwise not be able to attend UNB without this financial assistance. The recipient must be graduating from a high school in the Maritime Provinces and beginning the Bachelor of Science in Engineering or the Bachelor of Computer Science degree program on the Fredericton campus. Consideration will be given to scholastic attainment as well as the student's involvement in extracurricular activities. The recipient may retain this scholarship for the duration of the undergraduate degree program as long as s/he maintains Dean's List status and full-time enrolment, and demonstrates continuing financial need for this award. One scholarship will be awarded every 4 years.	In memory of his father by J. Gordon Azar, BSc Engineering 1960; his wife Renee Azar; and his sons Gregory Azar, BCS 2001, and Sebastien Azar, BCS 2005.
UNRESTRICTED	Richard Bagley Memorial Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded to a graduate of Fredericton High School, Oromocto High School, Leo Hayes High School, or Ecole Sainte-Anne, beginning an undergraduate degree program at UNB. Selection is made on the basis of financial need to students who have demonstrated successful academic performance.	Friends and Family of Richard J. Bagley, BA '72, MA '79 and the New Brunswick University Opportunities Fund.
SCIENCE	Dr. Douglas G. Baird Scholarship	Science.	$1,250.	1.	1 year.	Awarded to a Fredericton campus student who is beginning the Bachelor of Science undergraduate degree program directly from high school. Selection is based on academic achievement and financial need.	Dr. Douglas G. Baird, BA'64.
UNRESTRICTED	Otty L. Barbour Memorial Scholarship	Unrestricted.	Variable.	Variable.	up to 4 years.	Residents of New Brunswick who have shown marked promise in their high school course and who need financial assistance.	The late Otty L. Barbour.
UNRESTRICTED	Milton and Patricia Bassen Scholarship	Unrestricted.	Min. $500.	1 or more.	1 year.	Awarded to a Saint John campus student from the greater Saint John area who is beginning an undergraduate degree program. Selection will be based on academic achievement and financial need.	Greater Saint John Community Foundation.
UNRESTRICTED	Beaverbrook Scholars Award	Unrestricted.	$12,500 per annum.	3.	4 years.	Awarded to an outstanding graduate of a New Brunswick high school who is beginning an undergraduate degree program at UNB. Selections are made on the basis of scholastic attainment and financial need. Consideration may be given to participation in extra-curricular activities.	Lord Beaverbrook Scholars.
UNRESTRICTED	Lord Beaverbrook Scholarship	Unrestricted.	$10,000.	6.	4 years.	Awarded to students who have graduated from a New Brunswick high school and are beginning an undergraduate degree program. Selections are made on the basis of scholastic attainment and financial need.	The University.
MULTIPLE	Betts/Wilbur Memorial Scholarship	Computer Science, Engineering, or Science.	$11,000.	At least 5.	4 years.	Awarded to students who are enrolled in the Bachelor of Computer Science, Bachelor of Science, or Bachelor of Science in Engineering degree programs who are graduates of a New Brunswick high school. Selection is based on academic attainment and financial need.	David W. and Wendy F. Betts and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Bicentennial Entrance Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded primarily on the basis of scholastic attainment to students beginning an undergraduate degree program.	The University.
ENGINEERING	Bishop Family Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a student from Queen's County who has graduated from a New Brunswick high school, is beginning the Bachelor of Science in Engineering degree program and does not hold any major scholarships. Selection is based on academic achievement with consideration given to extracurricular activities.	Darrell Bishop (BSE 1970) and family.
MULTIPLE	P. William Bishop Memorial Scholarship	Engineering.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student who has graduated from a high school in Canada, and is entering the Engineering degree program.	Mrs. Bethia G. Bishop and family in memory of her husband and their father, Mr. P. William Bishop, BSc.Eng.CE 1942, recipient of the Ketchum Medal 1942.
UNRESTRICTED	Bliss - Trzop Athletic Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and is enrolled in an undergraduate degree program at UNB. The recipient must have significant athletic skill and involvement in either high school or community sport. Selection is based on athletic ability, academic achievement and financial need. Preference will be given to a student beginning an undergraduate degree program directly from high school.	Iris Bliss and Stanley Trzop in honour of their mothers, Gladys E. C. Bliss & Zelia Trzop. A contribution was made by the New Brunswick University Opportunities Fund.
ARTS	Dr. Charles K. and Mickie Bowman Scholarship	Arts.	$5,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Arts degree on the Fredericton campus directly from Oromocto High School. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	Mickie Bowman, the late Dr. Charles (Chad) Bowman, former professor of sociology at UNB, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Deanna Craig Bradley Memorial Scholarship	Unrestricted.	$3,000.	2.	1 year.	Awarded to one student beginning an undergraduate degree program directly from Canterbury High School and one student beginning an undergraduate degree program directly from Woodstock High School. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Mr. Edwin Bradley and the New Brunswick University Opportunities Fund.
ENGINEERING	Paul and Andrea Bragdon Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Science in Engineering (any discipline). Selection will be based on academic achievement and financial need. Preference will be given to students from Millville, Hainesville or Nackawic area.	Paul (BSE CE 1993, MSE CE 1996) & Andrea Bragdon.
SCIENCE	Loree Bremner Scholarship	Science.	$7,500.	1.	4 years.	Awarded to a female student who is entering the Bachelor of Science degree program on the Fredericton campus. The recipient must be from New Brunswick. Selection will be based on academic achievement and financial need.	The Family of Loree Bremner (BSc 1960).

UNRESTRICTED	H. S. Bridges Memorial Scholarship	Unrestricted.	Min. $2,250.	1.	1 year.	To a graduate of Saint John High School, who has high academic qualifications and is in need of financial assistance.	Dr. Colin B. Mackay, Rothesay, N.B. and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Woodrow and Margaret Brogan Scholarship	Unrestricted.	$1, 500.	1.	4 years.	Awarded to a student who has graduated from a New Brunswick high school and is beginning an undergraduate degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Frances C. Brogan (BA 1971, BEd 1971) and J. David O'Brien (BBA 1971, LLB 1973) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Clayton A. Buckingham Basketball Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a male student who is entering an undergraduate degree program on the Fredericton campus and is a member of the UNB Reds men's basketball team. The recipient must be a resident of New Brunswick and meet the minimum entrance average (80% for high school students or 2.0 GPA for transfer students, as per U SPORTS regulations). This award is also open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	The Buckingham Family.
UNRESTRICTED	Doris A. Campbell Memorial Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a student entering UNB from Chipman Forest Avenue School. Selection is made on the basis of scholastic attainment with particular emphasis on English and financial need.	Mr. James S. Campbell.
UNRESTRICTED	Canada Wide Science Fair Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a student entering an undergraduate program at UNB who has demonstrated merit at the Canada Wide Science Fair.	The University.
UNRESTRICTED	Carleton & York Regimental Association Memorial Scholarship	Unrestricted.	$4,000.	2.	1 year.	Preference to children or grandchildren of an overseas veteran of the Carleton and York Regiment in World War II irrespective of residence, and secondly to children or grandchildren of any overseas veteran of World War II, the said veteran being or having been a resident of New Brunswick and irrespective of where the child or grandchild resides. Failing to find a suitable candidate, the scholarship shall be open to any child or grandchild of any other veteran, being or having been a resident of New Brunswick and irrespective of where the child or grandchild currently resides. Failing a suitable applicant or candidate in this third class, the Scholarship shall be open to any applicant residing in New Brunswick. Under this final class of suitability consideration shall be given to those who have served or are serving or whose parents served in the Land Reserve and particularly First Battalion Royal New Brunswick Regiment.	The Carleton and York Regiment Association of Saint John.
UNRESTRICTED	Governor Thomas Carleton Scholarship	Unrestricted.	$1,000.	Variable.	Up to 4 years.	Awarded on the basis of academic achievement to students entering a degree program at UNB.	The University.
UNRESTRICTED	Carty Family Scholarship	Unrestricted.	$3,000.	1.	4 years.	Awarded to a student beginning an undergraduate degree program. The recipient must be a graduate of a New Brunswick high school. Selection will be based on academic achievement and financial need. One scholarship will be awarded every four years.	Ken (BScF 1966), Elaine (BN 1966), William (BA 1973) Carty and Lisa (BA 2003) Carty.
ENGINEERING	CBCL Women in Engineering Schoarship	Engineering.	$1,000.	1.	1 year.	Awarded to a woman student entering an undergraduate degree program in the Faculty of Engineering on the Fredericton campus. Selection will be based on academic achievement. This award is open to transfer students as well.	CBCL Limited.

SCIENCE, APPLIED SCIENCE & ENGINEERING	Centre for Marine Biodiversity Essay Scholarship	Science.	$2,000, $1,000 or $500.	3.	1 year.	Awarded to a Saint John campus student who placed first, second or third place in the Centre for Marine Biodiversity Essay contest and is beginning the Bachelor of Science degree program the following Fall. The scholarship will be awarded as follows: $2000 will be awarded for first place; $1000 for second place and $500 for third place.	UNB Saint John.
EDUCATION	CFUW Fredericton 75th Anniversary Scholarship	Education.	$2,000.	1.	1 year.	Awarded to a female student enrolled in the Early Years/Elementary or Middle Years/Secondary stream of the Bachelor of Education (School Years) degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Canadian Federation of University Women (CFUW) Fredericton and the New Brunswick University Opportunities Fund.
UNRESTRICTED	CFUW Fredericton Renewable Scholarship	Unrestricted.	$2,000.	1.	4 years.	Awarded to a female student beginning an undergraduate degree program on the Fredericton campus. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One scholarship will be active at a time.	Canadian Federation of University Women (CFUW) Fredericton and the New Brunswick University Opportunities Fund.
UNRESTRICTED	CFUW Saint John Entrance Scholarship	Unrestricted.	Min. $1,000.	1.	1 year.	Awarded to a female student beginning an undergraduate degree program on the Saint John campus directly after graduating from a high school in the Greater Saint John area. Selection is based on academic achievement and financial need.	Canadian Federation of University Women, Saint John.
MULTIPLE	Cherrington Family Scholarship	Science or Nursing.	$6,000.	1.	4 years.	Awarded to a student beginning a Bachelor of Science or Bachelor of Nursing degree program directly from high school. Selection will be based on scholastic achievement and financial need. One scholarship is awarded every four years.	Alan and Debbie Cherrington and Alan's parents, Jeanne and Horace Cherrington.
MULTIPLE	Maggie Jean Chestnut Scholarship	Arts or Science.	Variable.	1 or more.	Up to 4 years.	Women students registered in either the Faculty of Arts or the Faculty of Science. Students in Home Economics or similar courses are not eligible. Preference will be given to students in residence at the Maggie Jean Chestnut House. Scholarship is also open to Fredericton women living at home. Selection will be made on the basis of good academic standing with consideration being given to financial need.	The late Mrs. Annie T. Chestnut.
UNRESTRICTED	Ward Chipman Founder's Scholarship	Unrestricted.	$500.	Variable.	Up to 4 years.	Awarded on the basis of academic achievement to students entering a degree program at UNB.	The University.
COMPUTER SCIENCE	Eldon and Maxine Clair Faculty of Computer Science Scholarship	Computer Science.	$5,000.	1 or more.	4 years.	Awarded to Fredericton campus students beginning an undergraduate degree program in the Faculty of Computer Science directly from high school. Selection is based on academic achievement. Consideration may be given to financial need and/or extra-curricular activities.	The estate of Eldon and Maxine Clair.
UNRESTRICTED	Eldon and Maxine Clair Scholarship	Unrestricted.	$6,000 for Year 1; $5,000 for the next three years.	2.	4 years.	Awarded to a student who has graduated from a Carleton County High School, with preference given to a graduate of Carleton North High School, and is beginning an undergraduate degree. Selection will be based on scholastic attainment and financial need.	Eldon and Maxine Clair and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Mary Nora Clark Scholarship	Unrestricted.	$2,500.	1.	1 year.	Awarded to a female student who is entering an undergraduate degree program on the Fredericton campus who is a member of the UNB Reds women's basketball team. The recipient must meet the minimum entrance average (80% for high school students or 2.0 GPA for transfer students, as per U SPORTS regulations). This award is also open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours. Preference will be given to a student who has demonstrated leadership qualities.	David Clark and Barbara Ramsay, Bertha Clark, and family of Mary Nora Clark (a Red Bloomer, Class of 1954).
UNRESTRICTED	Class of 1941 Scholarship	Unrestricted.	$4,100 per year.	3.	4 years.	Awarded to a student beginning an undergraduate degree program on the Fredericton campus. The recipient must be a Canadian citizen or a Landed Immigrant. Selection is made on the basis of financial need and academic performance. There will be three active scholarships.	UNB Class of 1941.
MULTIPLE	Class of 1966 Engineering Scholarship	Engineering.	$1,000.	1.	4 years.	Awarded to students entering the Bachelor of Science in Engineering degree program directly from high school. Selection is made on the basis of academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Only one scholarship will be awarded every 4 years.	Class of 1966 Engineering and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Julia Buchanan Coburn Memorial Scholarship	Unrestricted.	Variable.	At least 1.	1 year.	Awarded to students from York County, with preference given to students who attended Keswick Ridge School. Selections are made on the basis of scholastic attainment and financial need.	Friends of the late Mrs. Julia Buchanan Coburn and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Robert Maynard Coburn Memorial Scholarship	Unrestricted.	Min. $1,800.	1.	1 year.	Awarded to a student entering an undergraduate degree program on the Fredericton campus, who is a graduate of a high school located in the province of New Brunswick, and is a resident of Queens or Sunbury County. Selection is made on the basis of scholastic attainment and financial need.	Allan Greene and his wife, the late Helen Greene, in loving memory of Helen's brother Bobby.
COMPUTER SCIENCE	Computer Science Alumni Entrance Scholarship	Computer Science.	Variable.	Variable.	1 year.	Awarded to full-time students who are entering an undergraduate degree program in the Faculty of Computer Science on the Fredericton campus. Selections are made on the basis of scholastic attainment; financial need may be taken into consideration.	Computer Science Alumni.
COMPUTER SCIENCE	Rodney Cooper Bursary in Computer Science	Computer Science.	Min. $2,500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is a graduate of a New Brunswick high school and is beginning an undergraduate degree program in the Faculty of Computer Science. The student must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Prof. Rodney Cooper, former students of Prof. Cooper and the New Brunswick Universities Opportunity Fund.
UNRESTRICTED	James M. Cotter Scholarship	Unrestricted.	$1,000.	1.	4 years.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program. Selection is based on academic achievement. Consideration may be given to financial need. One scholarship is to be awarded every four years.	Dr. Donald Church, BScEE '79.
MULTIPLE	Randolph E. Cox Scholarship	Science.	$4,000.	1.	1 year.	Worthy student beginning the undergraduate program leading to a Bachelor of Science degree. Academic merit and need will be considered.	The late Randolph E. Cox.

FORESTRY	Dr. Ivan H. Crowell Scholarship in Forestry	Forestry.	Variable.	2.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and is beginning a Forestry degree program at UNB. Selection is based on scholastic attainment and financial need.	The estate of the late Dr. Ivan H. Crowell and Mrs. Mildred A. Crowell and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Currie Undergraduate Scholarship	Unrestricted (not Engineering).	Total - $65,000.	Up to 4.	4 years.	Awarded to students beginning a degree program other than Engineering upon graduation from a high school in any of the four Atlantic Provinces. The scholarships are intended to support the education of future leaders. The applicants are therefore asked to submit an essay (not less than 250 words) giving the Selection Committee an indication of their leadership capabilities to date, including (but not limited to) school and extra-curricular activities. Required in the essay is evidence of overcoming barriers or difficult situations. Students in articulated degree programs are not eligible to receive this scholarship. Financial need is an important consideration. Recipients are required to live in residence for the first year of their degree program.	Richard James Currie, O.C., O.N.B., C.B.H.F., M.B.A., D. Litt., P.Eng. installed as Chancellor of the University of New Brunswick in May 2003 and named Chancellor Emeritus in May 2013.
ENGINEERING	Currie Undergraduate Scholarship in Engineering	Engineering.	Total - $65,000.	Up to 4.	4 years.	Awarded to students beginning a Bachelor of Engineering degree program upon graduation from a high school in any of the four Atlantic Provinces. The scholarships are intended to support the education of future leaders. The applicants are therefore asked to submit an essay (not less than 250 words) giving the Selection Committee an indication of their leadership capabilities to date, including (but not limited to) school and extra-curricular activities. Required in the essay is evidence of overcoming barriers or difficult situations. Financial need is an important consideration. Recipients are required to live in residence for the first year of their degree program.	Richard James Currie, O.C., O.N.B., C.B.H.F., M.B.A., D.Litt., P.Eng. installed as Chancellor of the University of New Brunswick in May 2003 and named Chancellor Emeritus in May 2013.
MULTIPLE	Day & Ross Scholarship	Business Administration or Computer Science.	$1,000.	1.	4 years.	Awarded to a student who is entering a Bachelor of Business Administration, Bachelor of Computer Science or Bachelor of Science in Computer Science. The recipient must be a graduate of Carleton North Senior High School, Hartland Community School or Woodstock High School. Selection will be based on academic achievement.	Day & Ross.
ENGINEERING	John R. Dean Scholarship	Engineering.	$2,000.	1.	1 year.	Awarded to a student, who has graduated from a New Brunswick high school, and is beginning an undergraduate degree program in Engineering on the Fredericton campus. Selection is made with consideration to scholastic attainment and financial need.	The family of the late John R. Dean, B.Sc., M.Sc., D.Sc., P.Eng. And the New Brunswick University Opportunities Fund.
UNRESTRICTED	Jacques and Bernadette DeGrace Scholarship	Unrestricted.	$1,500.	1.	4 years.	Awarded to a student who is a graduate of École Sainte-Anne High School and is beginning an undergraduate degree program on the Fredericton campus. Selection is based on academic achievement, financial need and extracurricular activities. The recipient must be a New Brunswick resident, according to the definition of the Provinical Government's Student Financial Services guidelines. One scholarship will be active at any given time.	Michèle A. Thébeau (BSE EE 1984) and the New Brunswick University Opportunities Fund.

NURSING	Lynda Doiron Memorial Scholarship	Nursing.	$1,000.	1 or more.	4 years.	Awarded to a Fredericton campus student who is entering their first year of the Bachelor of Nursing degree program. Selection will be based on academic achievement and financial need. Preference will be given to a single mother or mature student. This award is also open to transfer students. One scholarship to be awarded every four years.	Charles Doiron (BSc 1977, MSc 1979)
MANAGEMENT	Michael Douglas Scholarship	Business Administration.	$6,000.	1.	4 years.	Awarded to a Fredericton campus student who is beginning the Bachelor of Business Administration degree program directly from high school. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the Provincial Government's Student Financial Services guidelines. Consideration may be given to extracurricular activities. One scholarship will be active in any given year.	Michael Douglas (BBA 1965) and the New Brunswick University Opportunities Fund.
NURSING	Dr. Everett Chalmers Hospital Auxiliary Entrance Bursaries	Nursing.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to Fredericton campus students who are graduates of a high school in York, Victoria, Carleton or Sunbury Counties and are beginning the Bachelor of Nursing degree program.	Dr. Everett Chalmers Hospital Auxiliary and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. Oetker UNB Scholarship	Unrestricted.	Up to tuition.	Variable.	2 years.	Awarded to students from the Grand Falls region who are entering an undergraduate degree program at UNB. Selection will be based on academic achievement. Preference will be given to students who have participated in the SHAD program. Consideration will be given to financial need. Students must achieve a 3.0 scholarship GPA in their first year at UNB to renew this award for year two.	Dr. Oetker.
UNRESTRICTED	Catherine Dryden Scholarship	Unrestricted.	$700.	1.	1 year.	Awarded to a student who is a graduate of Moncton High School and is beginning an undergraduate degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family of the late Catherine Tuck (Dryden) (BA '72) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Mary Lou Duff Memorial Scholarship	Unrestricted.	$400.	1.	1 year.	Awarded to a deserving student entering university on the Saint John campus. Selection is made on the basis of financial need and scholastic attainment.	Friends of the late Mary Lou Duff.
MULTIPLE	Catherine Earle and her parents Dr. Thomas and his wife Mary (West) Earle Scholarship for Full-time Students	Arts or Science.	Variable.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick high school and is beginning an undergraduate degree program on the Fredericton campus. Selection is made on the basis of scholastic attainment and financial need. The profile of the recipient must indicate that the recipient is hard working, and consideration may be given to the recipient's participation in extracurricular activities.	Friend of Catherine Earle and the New Brunswick University Opportunities Fund.
UNRESTRICTED	James F. and Gertrude L. (Currie) Edwards Memorial Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a student beginning an undergraduate degree program who has attended either Nackawic High School or Keswick Ridge School and has demonstrated successful academic performance.	Joan Edwards and the New Brunswick University Opportunities Fund.
ARTS	Faculty of Arts Entrance Scholarship	Arts.	Variable.	Variable.	1 year.	Awarded to students who are entering the Bachelor of Arts degree program on the Fredericton campus. Selections are made on the basis of scholastic attainment; financial need and/or extracurricular activities may be taken into consideration.	Faculty, Staff, Alumni and Friends of the Faculty of Arts.

ENGINEERING	Brent Fillmore Family Scholarship	Engineering.	$5,000.	1.	4 years.	Awarded to a student entering the Bachelor of Science in Engineering degree program on the Fredericton campus. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	Brent Fillmore (BSc CE 1977) and Terry (McBride) Fillmore (BN 1977) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Hugh John Flemming Memorial Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student beginning an undergraduate degree program directly from high school. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Friends, family and admirers of the late Hugh John Flemming, Premier of New Brunswick, 1952-60 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	J.K. Flemming Scholarship	Unrestricted.	Min. $500.	1.	1 year.	Student from the County of Carleton or the County of Victoria. Award is made on the basis of academic performance and financial need.	The late Hon. J.K. Flemming.
UNRESTRICTED	Foley-Woodroffe Scholarship	Unrestricted.	$12,081.	5.	4 years.	Awarded to Saint John campus students who are enrolled in an undergraduate degree program. Selection is based on academic achievement. Consideration may be given to financial need and/or extracurricular activities. The value of this scholarship is to be increased each year by the same percentage increase in tuition. Five scholarships to be awarded every 4 years.	The Estate of Violet E. Woodroffe.
UNRESTRICTED	Ganong Chocolates Scholarship	Unrestricted.	$2,500.	1.	4 years.	Awarded to a student who has graduated from St. Stephen High School and is beginning an undergraduate degree program. Selection will be based on scholastic attainment and financial need.	Ganong Bros. Limited and the New Brunswick University Opportunities Fund.
BUSINESS ADMINISTRATION	Arthur D. Ganong Scholarship	Business Administration.	$2,000.	1.	4 years.	Awarded to an outstanding graduate of a New Brunswick high school who is beginning an undergraduate Business Administration degree program at UNB. Preference will be given to students who graduate from a Charlotte County high school. Selection is made on the basis of academic performance and financial need. One scholarship awarded every 4 years.	Arthur D. Ganong Foundation and the New Brunswick University Opportunities Fund.
COMPUTER SCIENCE	Mahin and Ali Ghorbani Scholarship	Computer Science.	$2,000.	1.	1 year.	Awarded to a student from New Brunswick or an international student who is beginning the first year of undergraduate degree program in the Faculty of Computer Science on the Fredericton campus. Selection will be based on academic achievement and financial need. Preference will be given to a student from a Third World or developing country.	Mahin and Ali Ghorbani.
ENGINEERING	M. Patrick Gillin Ottawa Engineering Scholarship	Engineering.	$4,000 yr1; $3,000 yr2; $2,000 yr3; $1,000 yr 4/5.	5.	Up to 5 years.	Awarded to students enrolled in the Engineering degree program who have graduated from an Ottawa-area high school. Selection will be made on the basis of scholastic achievement. Financial need may be taken into consideration.	The Gillin Family.
NURSING	Lorna (Belyea) Glencross Scholarship	Unrestricted, but preference to Education or Nursing.	$500.	Min. 1.	1 year.	Awarded on the basis of academic performance and financial need, to a student beginning an undergraduate degree program, who is a graduate of Saint John High School.	Mrs. Lorna (Belyea) Glencross, Saint John High School 1941 and Mr. Gordon J.

							Glecross, BScCE UNB 1950.
UNRESTRICTED	Hermie and Elsie Godin Memorial Scholarship	Unrestricted.	$3,750.	1.	1 year.	Awarded to a student from Restigouche County who is enrolled in an undergraduate degree program directly from high school. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The children of Hermie and Elsie Godin, in their loving memory, and the New Brunswick University Opportunities Fund.
COMPUTER SCIENCE	Mary Goggin Scholarship	Computer Science.	$1,000.	1.	4 years.	Awarded to a Fredericton campus student beginning a Bachelor of Computer Science degree program. Selection will be based on academic achievement.	Mary (Hanley) (BSc CS 1982) and Kenneth Goggin (BBA 1981, BSc CS 1984).
COMPUTER SCIENCE	Alastair and Jennifer Grant Scholarship in Computer Science	Computer Science.	$500.	1.	1 year.	Awarded to a Fredericton campus student beginning a degree in the Faculty of Computer Science directly after graduating from a New Brunswick high school. Selection is based on academic achievement.	Alastair Grant (BCS 2005) and Jennifer Grant (BEd 2006).
COMPUTER SCIENCE	Uday Gujar Scholarship for Excellence in Computer Science	Computer Science.	$1,250.	1.	1 year.	Awarded to a Fredericton campus student who is beginning the Bachelor of Computer Science degree program directly from a New Brunswick high school. Selection will be based on scholastic attainment and financial need.	Established by Sarita Gujar for her husband Uday Gujar, Professor, Faculty of Computer Science.
UNRESTRICTED	Minto and Greta Harris Memorial Scholarship	Unrestricted.	$5,000.	1.	1 year.	Awarded to Fredericton campus student who is beginning the first year of an undergraduate degree program and is a graduate of North and South Esk Regional High School, Miramichi Valley High School or James M Hill High School. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to a graduate of North and South Esk Regional High School. Selection is based on academic achievement. Consideration may be given to financial need, involvement in the community, athletic leadership, and/or extracurricular activities.	Kevin Harris Family Trust and the New Brunswick University Opportunties Fund.
UNRESTRICTED	Hatheway Family Scholarship	Unrestricted.	$5,000.	1.	4 years.	Awarded to a Fredericton campus student who is enrolled in an undergraduate degree program and is a graduate of a New Brunswick high school. Selection will be based on academic achievement and participation in extracurricular activities.	Sherri and Robert (BSc 1991) Hatheway.
UNRESTRICTED	Haut-Saint-Jean Library Region Merit Award	Unrestricted.	$500.	1.	1 year.	Awarded to an outstanding grade twelve participant who is selected as the overall winner for the Teen Reading Challenge and is beginning an undergraduate degree program at UNB in the fall following receipt of the award.	The University.
NURSING	Cynthia (Oulton) Hendrix Nursing Scholarship	Nursing.	$10,000.	1.	1 year.	Awarded to a student entering the Bachelor of Nursing degree program on the Fredericton Campus. Selection is made on the basis of academic achievement. The recipient must be a New Brunswick resident.	Paul Hendrix, in memory of Cynthia (Oulton) Hendrix (BN 1988).
EDUCATION	Bertha Higgs Scholarship	Education.	$1,000.	1.	1 year.	Awarded to a student in the Bachelor of Education program on the Fredericton Campus. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to	The family and friends of longtime educator, Bertha Higgs, who with other educators

						the definition of the Provincial Government's Student Financial Services Guidelines.	dedicated their careers, often from a one-room schoolhouse, towards ensuring rural areas of New Brunswick had access to high quality primary education, and the New Brunswick University Opportunities Fund.
ARTS	Lester Hoar Memorial Scholarship in Arts	Arts.	$4,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Arts undergraduate degree program upon graduation from a Saint John high school. Selection is based on academic achievement. Preference will be given to a student who has been actively involved in writing or editing for his or her school newspaper.	The late Lester Hoar.
UNRESTRICTED	Rolande and Peter Hopkins Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a student beginning an undergraduate degree program on the Fredericton campus, who is a graduate of a high school in New Brunswick, and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Rolande and Peter Hopkins, BScME 1970, MScME 1972, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Indo-Canadian Scholarship	Unrestricted.	$1,000.	1.	1 year.	Open to students beginning an undergraduate degree program on the Saint John campus. Selection is based on scholastic attainment and financial need.	The Indo-Canadian Society of Saint John.
UNRESTRICTED	Carrie Ethel Ingersoll Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to graduates of Grand Manan High School. Selections are made on the basis of scholastic attainment. Consideration may be given to financial need.	The late Mr. John Robertson.
UNRESTRICTED	Arthur & Sandra Irving Primrose Scholarship	Unrestricted.	$10,000.	2.	4 years.	Awarded to students entering an undergraduate degree program on the Saint John campus. Selection is based on academic achievement and community/athletic leadership. Also, applicants are required to write a 500 word essay.	Arthur Irving, O.C., O.N.B. (D. Litt 2009) and Sandra Irving, C.M. (BA 1995, D. Litt 2009).
UNRESTRICTED	Irving Oil Scholarship at UNB	Unrestricted.	$10,000.	Min. 3	4 years.	Awarded to students beginning an undergraduate degree program. Selection is based on academic achievement. Consideration may be given to students who are actively involved in community volunteerism and extracurricular activities. The recipients must be graduates of a New Brunswick high school. Preference will be given to students in underrepresented groups.	Irving Oil.
UNRESTRICTED	Constable Royce Isenor Memorial Scholarship	Unrestricted.	$1,000.	1 or more.	1 year.	Awarded to a student beginning an undergraduate degree program on the Saint John campus directly after graduating from a high school in the Saint John area. Selection is based on academic achievement, community leadership and financial need.	Saint John Community Foundation.
UNRESTRICTED	JDI NB Scholarship at UNB	Unrestricted.	$8,000.	2 or more.	Up to 4 years.	Awarded to students who are beginning an undergraduate degree program with preference to those studying Business, Computer Science, Engineering or Forestry. Selection is made on the basis of academic achievement, self-motivation, contribution to community/extra-curricular activities, leadership ability and financial need. A shortlist of candidates will be interviewed by representatives of UNB and J.D. Irving Limited. The recipients must be New Brunswick residents and may also be offered employment	J.D. Irving, Limited.

						opportunities with J.D. Irving Limited throughout their degree program and/or upon graduation.	
KINESIOLOGY	Stella (Tabor) Keays Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student entering the Faculty of Kinesiology. Recipient must be a graduate of Sussex Regional High School. Selection will be based on academic achievement.	Stella Keays.
BUSINESS ADMINISTRATION	Pius King Memorial Scholarship in Business	Business.	$1,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Business Administration on the Saint John Campus upon graduating from a Saint John area high school, with preference given to graduates of Kennebecasis Valley High School. Selection is made on the basis of academic achievement, financial need and volunteer activities.	The family of the late Pius King.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Pius King Memorial Scholarship in Engineering	Engineering.	$1,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Science in Engineering program on the Saint John Campus upon graduating from a Saint John area high school, with preference given to the graduates of Kennebecasis Valley High School. Selection is made on the basis of academic achievement, financial need and volunteer activities.	The family of the late Pius King.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Pius King Memorial Scholarship in Nursing	Nursing.	$1,000.	1.	1 year.	Awarded to a student beginning the Bachelor of Nursing Program on the Saint John Campus upon graduating from a Saint John area high school, with preference given to graduates of Kennebecasis Valley High School. Selection is made on the basis of academic achievement, financial need and volunteer activities.	The family of the late Pius King.
MULTIPLE	Kirkpatrick Scholarship	Engineering.	$500.	1.	1 year.	Awarded to a female student who is graduating from a Saint John area high school and beginning the Bachelor of Science in Engineering degree program. Selection will be based on academic achievement and extracurricular involvement.	Leah Kirkpatrick, BScChE 2000.
UNRESTRICTED	Dave Laughlin Lancaster PC Association Scholarship	Unrestricted.	Min. $1,200.	1.	1 year.	Awarded to a student who is a graduate of Harbour View High School, Saint Malachy's High School or Saint John High School and is beginning an undergraduate degree program. Preference will be given to students who reside in west side of Saint John. Selection will be based on scholastic attainment, financial need and involvement in volunteer activities.	The Lancaster PC Association and the New Brunswick University Opportunities Fund.
NURSING	Ruth Laurie Nursing Bursary	Nursing.	$3,500.	2.	4 years.	Awarded on the basis of financial need to students who are beginning the Bachelor of Nursing degree program directly from high school. The recipient must demonstrate successful academic performance.	Ms. Laurie.
BUSINESS ADMINISTRATION	Leadership Development Award	Business.	Min. $850.	1.	1 year.	Awarded to a Saint John campus student entering the Business Administration degree program. Selection will be based on academic achievement and significant involvement in extra-curricular activities at high school and/or in the community. This award is to be given to a student who will continue to make a positive contribution to the life and spirit of the university and community.	Faculty, staff and friends of the Faculty of Business.
UNRESTRICTED	Jon LeHeup Bursary	Unrestricted.	$3,500.	1.	4 years.	Awarded on the basis of financial need to a student who has graduated from the Central New Brunswick Academy and is beginning an undergraduate degree program. The recipient must demonstrate successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One scholarship will be awarded every four years.	Jon LeHeup, BSC 1967 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Li Family Scholarship	Unrestricted.	$950.	1.	1 year.	Awarded to an international student entering an undergraduate degree program. Selection is based on academic achievement.	Ji Li (BBA 2006)

MANAGEMENT	Robert and Susan Little Scholarship	Business Administration.	$2,000	1.	1 year.	Awarded to a Fredericton campus student who is beginning the Bachelor Business Administration degree program directly from high school. Selection is based on academic achievement and financial need.	Robert and Susan Little - Class of 1966
ENGINEERING	exp Ottis Logue Scholarship	Engineering.	$2,500.	1.	1 year.	Awarded to a student from the Atlantic Provinces who is beginning the Bachelor of Science in Engineering degree program. Selection will be based on scholastic attainment and financial need.	exp Services Inc.
UNRESTRICTED	William H. A. Long Memorial Scholarship	Unrestricted.	$1,500.	1.	4 years.	Male student whose home is in the County of York, but not in the City of Fredericton, and who appears most deserving of financial assistance. The student so selected shall be chosen from those beginning an undergraduate degree program. One scholarship awarded every 4 years.	The late William Henry Allison Long.
UNRESTRICTED	Dr. Colin B. Mackay Leadership Award	Unrestricted.	$10,000.	1.	Up to 4 years.	Awarded to Canadian and/or international students who are beginning an undergraduate degree program on the Saint John campus directly from high school. Selection is based on scholastic attainment, the demonstration of leadership qualities, as well as community involvement.	The estate of Dr. Colin B. Mackay, BA' 42, LLD '55, President of UNB, 1953-1969, President Emeritus 1978-2003.
MULTIPLE	J. Stephen MacLellan Scholarship	Business Administration.	$3,000.	1.	1 year.	Awarded on the basis of academic performance and financial need to a student who is a graduate of Riverview High School and is entering the Business Administration degree program at UNB. Should no candidate of this description exist in any given year, the Scholarship may be awarded to a graduate of Riverview High School who is entering any degree program at UNB, or failing that, a graduate of other New Brunswick high schools, with preference to Moncton area schools.	Mr. J. Stephen MacLellan and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Allison MacMillan of Black Point NB Scholarship	Unrestricted.	$2,000.	6.	1 year.	Awarded to students who are from Restigouche or Gloucester County, New Brunswick, and are beginning an undergraduate degree program. Selection will be based on academic achievement and financial need.	Allison MacMillan and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. Bernice L. MacNaughton Memorial Alumnae Scholarship	Unrestricted.	$500.	1.	1 year.	Students beginning an undergraduate degree program who have graduated from a high school in Moncton, New Brunswick. Selection is made on the basis of scholastic attainment and financial need.	The Associated Alumnae.
FORESTRY	William MacNeill Scholarship	Forestry or Forest Engineering.	$2,000.	1.	1 year.	A student with high academic standing who is beginning a program leading either to the degree of Bachelor of Science in Forestry or Bachelor of Science in Forest Engineering.	The late William MacNeill.
UNRESTRICTED	Jeff Matchett Memorial Scholarship	Unrestricted.	$750.	1.	1 year.	Awarded to a full-time or part-time student beginning their undergraduate degree program at UNB who is a graduate of North and South Esk Regional High School. Preference will be given to a full-time student. Selection will be based upon scholastic attainment and financial need.	Roussel Toyota and the New Brunswick University Opportunities Fund.
SCIENCE	Isabelle Wilcox Mausser & William John Mausser Scholarship	Science.	$5,000.	1.	1 year.	Awarded to a New Brunswick student beginning the Bachelor of Science degree program on the Fredericton campus. The recipient must be from Charlotte county. Selection will be based on academic achievement and financial need.	Isabelle Wilcox Mausser and William John Mausser; in memory of Hiram and Nellie Wilcox.

FORESTRY	Ken Maybee Memorial Scholarship	Forestry and Environmental Management.	$1,000.	1.	1 year.	Awarded to a New Brunswick student entering the Bachelor of Science in Environment and Natural Resources program. Selection is based on academic achievement. Consideration may be given to the student's involvement in extracurricular activities and/or financial need.	Kim Maybee (BA 1985, MEd 1990)
NURSING	Peter Maynes Memorial Scholarship	Nursing.	$700.	1.	1 year.	Awarded to a student beginning an undergraduate degree program in the Faculty of Nursing, who is a graduate of a New Brunswick high school.	Mrs. Elizabeth Maynes in memory of her late husband, Mr. Peter Maynes.
ARTS	Dr. W. Allan G. And Constance Young McAndrew Scholarship	Arts.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a Gloucester County high school and is beginning an Arts degree program at UNB. Preference may be given to a student who has demonstrated scholastic achievement in French.	Mrs. Constance Young McAndrew in memory of her husband, Dr. W. Allan G. McAndrew.
UNRESTRICTED	Andrew and Marjorie McCain Scholarship	Unrestricted.	$4,000 per year.	2.	4 years.	Awarded to a Fredericton campus student, with preference to a student who is a graduate of a high school in Carleton County or Victoria County, NB. Selection is made on the basis of scholastic attainment and financial need.	The family of the late Andrew H. McCain, member of the Class of 1943 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	H. Harrison McCain Bursary	Unrestricted.	$4,000 per year.	Variable.	4 years.	Awarded to students, who have graduated from any high school in Canada. Selection criteria include financial need, scholastic attainment, leadership qualities, and a demonstrated initiative on the part of the student in funding his/her own education. The bursaries are renewed based on the recipient maintaining an overall academic average of 2.5 in year one, 2.75 in year two and 3.0 in year three and year four.	H. Harrison McCain Foundation.
UNRESTRICTED	Eugene & Verna McCarthy Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment to a student entering an undergraduate degree program at UNB, who has graduated from a New Brunswick high school.	Mrs. Verna McCarthy.
MANAGEMENT	Maureen McCarthy Memorial Bursary	Business Administration.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student from Westmorland County who is beginning the Bachelor of Business Administration degree program. The recipient must demonstrate successful academic performance.	Family and friends of Maureen McCarthy and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Wilson McKenzie Memorial Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student from Southern Ontario beginning an undergraduate degree program on the Fredericton campus. Preference will be given to a student from the Cambridge or Hamilton areas. Selection will be based on academic achievement.	Warren McKenzie (BSc CS 1976, DLITT 2010) and Julia MacLauchlan (BA 1977, DLITT 2010).
UNRESTRICTED	Dr. Marie M. McKnight, Michael S. Whitford & Family Scholarship	Unrestricted.	$2,000.	1.	Up to 5 years.	Awarded to a student who is beginning a degree program and is a graduate of St. Stephen High School. Selection is based on scholastic achievement and extracurricular involvement in such activities as athletics and drama. There will be one scholarship awarded every 4 or 5 years. The original $2,000 scholarship will be renewed as follows: If the recipient achieves between 3.50 and 3.70 scholarship gpa, the value will be $1,000; if the recipient achieves between 3.71 and 4.00 scholarship gpa, the value will be $2,000; if the recipient achieves a 4.01	Dr. Marie M. McKnight and Michael S. Whitford.

						scholarship gpa or higher, the value will be $3,000; if the recipient achieves less than a 3.50 scholarship gpa, then the scholarship is awarded to a new candidate.	
UNRESTRICTED	Brian McLatchie Bursary	Unrestricted.	$2,500.	1.	4 years.	Awarded on the basis of financial need to a Fredericton campus student who is a graduate of a New Brunswick high school and is beginning an undergraduate degree program. The recipient must demonstrate successful academic performance.	Brian McLatchie (BA 1964, MA 1969) and the New Brunswick University Opportunities Fund.
ARTS	McLean Budden Entrance Scholarship	Arts.	$1,250.	1.	1 year.	Awarded to a student entering the Bachelor of Arts degree program on the Fredericton campus. Selection will be made on the basis of scholastic attainment and financial need.	McLean Budden Investment Managers.
UNRESTRICTED	Edith G. McLeod Memorial Scholarship	Unrestricted.	Approx. $1,400.	1.	1 year.	Awarded primarily on the basis of academic performance to a student entering first year at UNB, who is a graduate of a Kent County or Saint John County high school.	Dr. Colin B. Mackay.
UNRESTRICTED	W.K. McMenamon Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students who have graduated from a New Brunswick high school and are beginning an undergraduate degree program.	The late W. K. McMenamon.
UNRESTRICTED	Mr. & Mrs. Willard McMulkin Memorial Bursary	Unrestricted.	Min. $1,000.	1.	1 year.	Awarded to a student entering the University from either Queens or Sunbury Counties with the preference given to a student from the Gagetown area. Selection made on the basis of financial need and scholastic attainment.	Family of the late Mr. & Mrs. Willard McMulkin.
MULTIPLE	Merrithew-de Grandpré Bursary	Business Administration.	$1,000 per year.	1.	4 years.	Awarded on the basis of financial need to a student beginning the Bachelor of Business Administration degree program directly from high school. The recipient must be a Canadian citizen or permanent resident and demonstrate successful academic performance. One bursary will be awarded every 4 years.	Michael Merrithew (BBA 1980) and Louise de Grandpré (BPE 1979, BBA 1980).
ENGINEERING	W. Frederick Merrithew, BSE(CE) 1961, Memorial Scholarship	Engineering.	$4,000 per year.	1.	4 years.	Awarded to a student beginning the Bachelor of Science in Engineering degree program (any discipline) directly from high school. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selections are made on the basis of scholastic attainment, financial need and extracurricular involvement. One scholarship will be awarded every 4 years.	The family and friends of the late W. Frederick Merrithew, BSE(CE) 1961, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Donald P. Mersereau Memorial Scholarship	Unrestricted.	$900.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student beginning an undergraduate degree program at UNB.	The family of the late Mr. Donald P. Mersereau, a former employee of UNB.
MANAGEMENT	Michael J. Millie Scholarship	Business Administration.	$2,000.	1.	4 years.	Awarded to a student entering the Bachelor of Business Administration degree program on the Fredericton campus. Preference will be given to students from Carleton County, NB. The recipient must be New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	Michael Millie, BBA 1996 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Carolyn Crawford Nagle Memorial Scholarship	Unrestricted.	Approx. $300.	1.	1 year.	Awarded to a deserving student entering university on the Saint John campus. Selection is made on the basis of scholastic attainment and financial need.	Friends of the late Carolyn Nagle.

UNRESTRICTED	Nashwaak 1784-1984 Bicentennial Association Scholarship	Unrestricted.	Approx. $500.	1.	1 year.	Awarded to a student from the Nashwaak Valley region entering either the Fredericton or the Saint John campus of UNB. Selections are made on the basis of scholastic attainment. The scholarship is in memory of the first settlers of the Nashwaak Valley.	1784-1984 Nashwaak Bicentennial Association.
UNRESTRICTED	New Brunswick Provincial Science Fair Merit Award	Unrestricted.	$200.	1 or more.	1 year.	Awarded to an outstanding Grade XII participant in the N.B. Provincial Science Fair who registers in a degree program at UNB the following fall. Selection made by the Dean of Science, based on recommendations by the N.B. Provincial Science Fair Committee.	UNB Associated Alumni.
UNRESTRICTED	New Brunswick Society of Retired Teachers Saint John Branch Scholarship	Unrestricted.	Approx. $1,500.	1.	1 year.	Awarded to a student who is graduating from Saint John High School, Harbour View High School, St. Malachy's Memorial High School or Simonds High School and is beginning an undergraduate degree program on the Saint John campus. Selection is based on academic achievement and financial need.	New Brunswick Society of Retired Teachers, Saint John Branch and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Nolan-LeBlanc Scholarship	Unrestricted.	$6,000.	1.	1 year.	Awarded to a student beginning an undergraduate degree program. Selection will be based on academic achievement. Consideration will be given to financial need. The recipient must be from Restigouche County, NB.	Dr. Roderick Nolan (BSE EE 1957, MSE EE 1963, DSC 2004).
UNRESTRICTED	Charlotte Frances Otty Scholarship	Unrestricted.	Min. $400.	1.	1 year.	Awarded to a young woman having the highest standing on entering the University from the County of Queens. Should there be no candidate in any given year, the interest shall accumulate from year to year until the next Queens County woman enters the University.	The late Marianne Grey Otty.
MULTIPLE	Norval Hallett Otty Scholarship	Engineering or Forestry.	$500.	1.	1 year.	Awarded to a young man having highest standing on entering UNB from the County of Kings. Should there be no candidate in any given year, the interest shall accumulate from year to year until the next Kings County man enters the University.	The late Marianne Grey Otty.
UNRESTRICTED	William and Lois Paine Founder's Scholarship	Unrestricted.	$1,500.	Variable.	Up to 4 years.	Awarded on the basis of academic achievement to students entering a degree program at UNB.	The University.
MULTIPLE	Fletcher Peacock Memorial Scholarship	Unrestricted.	$800.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus students whose record shows they may benefit from a university education. Open to any New Brunswick student. Preference will be given to a student enrolled in the Bachelor of Business Administration, Bachelor of Science in Engineering.	Dr. G. Forbes Elliot, Former Vice-President, UNBSJ.
MULTIPLE	D. Ross Peebles Scholarship	Engineering.	$2,000.	1.	4 years.	Awarded to a Canadian or British student beginning the Bachelor of Science in Engineering degree program (any discipline). Selection is based on academic achievement and financial need. One scholarship will be active in any given year.	Ross Peebles (BSE CE 1968).
MULTIPLE	Mary Peebles Memorial Scholarship	Engineering.	$3,000.	1.	Up to 4 years.	Awarded to a Canadian or British student beginning any year of the Bachelor of Science in Engineering degree program (any discipline). Selection is based on academic achievement and financial need. Transfer students are eligible to be considered for this scholarship. At least one scholarship will be awarded every 4 years.	Ross Peebles (BSE CE 1968).
UNRESTRICTED	Hazel Birdena Pendleton Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment to a student from eastern Charlotte County (preference to residents or children of residents of Deer Island) who has graduated from one of the following high schools in this order of preference: Fundy High, Campobello Island Consolidated School, or Grand Manan High School.	Family of the late Hazel Birdena Pendleton.

MULTIPLE	Marlene Perkins Memorial Scholarship	Engineering, Computer Science or Science.	$8,500.	2.	4 years.	Awarded to a female student beginning the Bachelor of Science in Engineering, Bachelor of Computer Science or the Bachelor of Science degree program. Preference will be given to a student beginning the Bachelor of Engineering degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One scholarship will be active in any given year.	Malcolm Perkins (BScEE 1958) and family, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	W.A. Perkins Scholarship	Unrestricted.	$750.	1.	4 years.	Male high school graduate who is a resident of the City of Fredericton or the County of York. One scholarship awarded every 4 years.	The late William A. Perkins.
UNRESTRICTED	Bea Phillips CFUW Fredericton Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a female student beginning an undergraduate degree program on the Fredericton campus directly after graduating from a high school in the City of Fredericton. Selection is based on academic achievement and financial need.	Canadian Federation of University Women (CFUW) Fredericton and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Margaret Wallace Porter Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a deserving student beginning an undergraduate degree program. Selection is made mainly on the basis of scholastic attainment.	The late Margaret Wallace Porter.
UNRESTRICTED	PQA Scholarship	Unrestricted.	$3,000.	1.	4 years.	Awarded to a Fredericton campus student who is beginning an undergraduate degree program directly from high school. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. Consideration may be given to extracurricular activities.	PQA and the New Brunswick University Opportunities Fund.
UNRESTRICTED	President's Scholarship	Unrestricted.	$8,000.	Variable.	4 years.	Open to all students beginning an undergraduate degree program at UNB. Selections will be based on scholastic attainment.	The University.
UNRESTRICTED	Elizabeth Richards Killam Scholarship	Unrestricted.	$5,000.	4 or more.	4 years.	Awarded to students beginning an undergraduate degree program directly from high school. Selection is based on academic achievement with consideration given to financial need and involvement in extracurricular activities. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines, with preference being given to female students from the Campbellton area.	The late Robert Richards, in honour of his sister, the late Elizabeth Richards Killam.
FORESTRY	Hon C.D. Richards Scholarship	Forestry or Forest Engineering.	Min. $1,200.	1.	1 year.	Awarded to a needy and deserving student beginning a program leading either to the degree of Bachelor of Science in Forestry or the degree of Bachelor of Science in Forest Engineering.	The late Hon. C.D. Richards.
ENGINEERING	Kathryn & John Richardson Memorial Scholarship	Engineering.	$8,000.	3.	4 years.	Awarded to a student beginning the Bachelor of Science in Engineering program directly upon graduation from high school. Selection is based on academic achievement. Consideration may be given to financial need and/or extracurricular activities.	The estates of John (BSE EE 1941) and Kay Richardson.
UNRESTRICTED	Sir Charles G. D. Roberts Scholarship in Literary Excellence	Unrestricted.	$2,000.	1.	1 year.	Awarded to a student graduating from a District 18 high school who is selected as the overall winner for the District 18 Sir Charles G.D. Roberts Medal of Literary Excellence and is beginning an undergraduate degree program at UNB in the fall following receipt of the medal.	

MULTIPLE	Gordon S. Robinson Scholarship	Engineering.	$1,750.	1.	1 year.	Awarded to a student beginning the Bachelor of Science in Engineering (any discipline) directly upon graduation from Sussex High School. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Donald Robinson, BSc EE 1984 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Phyllis M. Robinson (nee Brown) Scholarship	Unrestricted.	$1,750.	1.	1 year.	Awarded to a female student beginning an undergraduate degree program directly upon graduation from Miramichi Valley High School. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Donald Robinson, BSc EE 1984 and the New Brunswick University Opportunities Fund.
MULTIPLE	Robin Rocca Scholarship	Science, Engineering, or Computer Science.	$3,000.	1.	1 year.	Awarded to a student graduating from a Saint John area high school who is a Canadian citizen or permanent resident and is beginning the Bachelor of Science, Bachelor of Science in Computer Science, Bachelor of Computer Science or Bachelor of Science in Engineering degree program. Selection is based on academic achievement and financial need. In keeping with the character of Robin Rocca, BSE(EE) 2003, the recipient would demonstrate athletic ability, leadership skills and commitment to family and the community.	Family and friends of Robin Rocca, BSE(EE) 2003 and the New Brunswick University Opportunities Fund.
ENGINEERING	Ivan F. Ronalds Engineering Scholarship	Engineering.	Min. $535.	1.	1 year.	To be awarded annually to a graduate of Bathurst High School who is beginning an engineering undergraduate degree program. Selection is made on the basis of scholastic attainment and financial need. Consideration will be given to participation in extracurricular activities.	Mr. Ivan F. Ronalds in memory of his mother.
NURSING	Ross Memorial Scholarship	Nursing.	$5,000.	1.	Up to 4 years.	Awarded to a Fredericton campus student who is beginning the Bachelor of Nursing degree program. Preference will be given to students from Kings County, N.B. In the event that there are no eligible candidates from Kings County, students from New Brunswick will be considered. Selection will be based on scholastic attainment, financial need and involvement in extra-curricular activities. The recipient must maintain a 3.0 grade point average in order to renew this scholarship each year.	Dr. James Ross in honour of his mother, Etta L. Ross, R.N., and his sisters, Audrey Ross Cummings, R.N. and Dorothy Ross Friars, R.N. and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Florence Ross Memorial Award	Unrestricted.	Approx. $500.	1.	Up to 4 years.	An award of approximately $500 per year, and renewable for up to three years, to be made on the recommendation of Vice-President (Saint John) to a Black student, entering a degree program on the Saint John campus, with the highest admission average from Saint John County. Renewal of the award is contingent upon the student continuing at UNB Saint John. The award has been funded by the late Florence I. Ross.	The late Florence I. Ross.
UNRESTRICTED	Dale E. Saunders Scholarship	Unrestricted.	$1,000.	1.	4 years.	Awarded to a student who is beginning an undergraduate degree program directly from high school. Selection is based on academic achievement. Consideration may be given to financial need and/or involvement in extracurricular activities.	Dale E. Saunders (BSE.CE 1969).
ENGINEERING	James M. Saunders Scholarship	Engineering.	$6,000.	2.	1 year.	Awarded to a student from Nova Scotia beginning the Bachelor of Science in Engineering (any discipline) degree program directly from high school. Preference will be given to a student from Cape Breton. Selection is based on academic achievement and financial need.	James M. Saunders (BSE.CE 1982).

MULTIPLE	Schulich Leader Scholarship	Science, Technology, Engineering, or Mathematics.	$25,000 or $20,000.	2.	4 years.	Awarded to a student beginning an undergraduate degree program in the STEM areas Science, Technology, Engineering or Mathematics who has been nominated from a high school, secondary school or CEGEP in Canada and is a Canadian citizen or permanent resident of Canada. Only Schulich Leader Nominees who complete and submit the Schulich Leader Scholarships online application form to UNB are eligible. Recipients must possess two of the following attributes: (a) academic excellence; (b) involvement in extracurricular activity where there is a demonstration of leadership in his or her school-life or community-life or has provided evidence of entrepreneurial talent; (c) financial need. One scholarship valued at $25,000 per year for four years will be awarded to a student enrolled in the Bachelor of Science in Engineering and one scholarship valued at $20,000 per year for four years will be awarded to a student enrolled in an undergraduate degree program in the remaining STEM areas of Science, Technology or Mathematics. A complete listing of eligible UNB programs is found on the Schulich Leaders website at www.schulichleaders.com	Seymour Schulich.
SCIENCE	Science Discovery Scholarship	Science.	Variable.	Multiple.	1 year.	Awarded to students who are entering the Bachelor of Science degree program on the Fredericton campus. Selections are made on the basis of scholastic attainment; financial need may be taken into consideration.	Alumni, friends, faculty and staff of the Faculty of Science, UNB Fredericton.
UNRESTRICTED	Michael Shanks Memorial Scholarship	Unrestricted.	Min. $1,000.	1.	1 year.	Awarded to a student who has graduated from a New Brunswick high school and is beginning an undergraduate degree program on the Fredericton campus. Selection is made on the basis of scholastic attainment and financial need.	Colleagues and friends of the late Michael Shanks, former Associate Registrar, UNB Fredericton and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Sharpe Family Scholarship	Unrestricted.	$13,000 per annum.	Up to 3.	4 years.	Awarded on the basis of scholastic attainment to a student entering a degree program at UNB on the Fredericton campus. Consideration will be given to the student's involvement in extracurricular activities and to financial need. There will be three active scholarships at any given time.	Dawn Sharpe (BScEngCE 1964, DSc 2010) and Susan Sharpe of Calgary, Alberta.
ARTS	Alvin Shaw Memorial Scholarship in Theatre	Arts.	Variable.	1 or more.	Up to 4 years.	Awarded to a Fredericton campus student with preference given to a student enrolled in an Arts Faculty degree program who intends to complete a Drama Minor or a Major in English (drama). The recipient must enrol in ENGL/DRAM 1173 or 2173, 2174 or 2175 during his/her first year at UNB. Theatre experience, grades and awards earned for work in drama will be the primary consideration in the selection of the recipient. The renewal of the scholarship is contingent on satisfactory academic performance and progress through the program.	Alvin Shaw.
EDUCATION	Sherman Scholarships in Early Childhood Education	Education.	$5,000.	4.	1 year.	Awarded to Fredericton campus students who are enrolled in the Bachelor of Education Early Childhood degree program. Selection is made on the basis of academic achievement and financial need. Preference will be given to Indigenous students for one of the four scholarships.	John and Judy Bragg Family Foundation.

SCIENCE, APPLIED SCIENCE & ENGINEERING	Nina Fairchild Simon Memorial Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Awarded to a Saint John campus student enrolled in an undergraduate degree program. Selections will be based on scholastic achievement and financial need. Preference will be given to students enrolled in the Bachelor of Science degree program.	The late William John Simon.
SCIENCE	Skillen LeBlanc Scholarship	Kinesiology.	$2,000.	1.	4 years.	Awarded to a student beginning the Bacholor of Science in Kinesiology or the Bachelor of Recreation and Sports Studies degree program. Selection will be based on academic achievement, financial need and involvement in extracurricular activities. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One award will be active at any given time.	Bob Skillen (BPE 1979, BEd 1981, MEd 1988) and Gisele LeBlanc (BEd (PE) 1978, D-AUS 2000) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Gertrude Winnifred Smith Scholarship	Unrestricted.	$1,500.	1.	4 years.	A woman from Charlotte County of good moral character, who is unable to pay her own expenses.	The late Gertrude Winnifred Smith.
UNRESTRICTED	John Roscoe Snodgrass Scholarship	Unrestricted.	Min. $8,000.	1 or more.	4 years.	Awarded to a student beginning an undergraduate degree program on the Fredericton campus. The recipient must be a Canadian citizen or Permanent Resident. Selection is made on the basis of academic achievement and financial need.	John Roscoe Snodgrass (BSE CE 1941).
UNRESTRICTED	Sobey Scholarship	Unrestricted.	$5,000.	Multiple.	1 year.	Awarded to students beginning their first undergraduate degree program. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selections are made on the basis of scholastic attainment and financial need.	The Sobey Foundation and the New Brunswick University Opportunities Fund.
ARTS	G. Wayne Squibb Scholarship	Arts.	$10,000.	1.	Up to 4 years.	Awarded to a student beginning the Bachelor of Arts degree program directly from high school. Selection is made on the basis of academic achievement and financial need with consideration given to involvement in extracurricular activities. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	G. Wayne Squibb and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Stackhouse Family Swim Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student entering an undergraduate degree program on the Fredericton campus from Westmorland, Albert or Kent counties, who will be a member of the UNB Reds swim team. Selection is based on athletic ability and academic achievement. The recipient must have achieved an 80% average, as per U SPORTS regulations. Preference will be given to graduates from the Codiac Vikings Aquatic Club.	Rod Stackhouse (BScCS 1980) and friends of the CVAC swim team.
UNRESTRICTED	Donald G. Stymiest Memorial Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student beginning an undergraduate degree program. Selection will be based on academic achievement and financial need. The recipient must be a graduate of Miramichi Valley High School or James M. Hill Memorial High School in New Brunswick.	Dr. Barbara Stymiest (DLITT 2005).
ARTS	Ashoki Sujanani Scholarship	Arts.	$8,000.	1.	4 years.	Awarded to a Fredericton campus student enrolled in the Bachelor of Arts degree on the Fredericton campus. Selection is based on academic achievement and financial need. Consideration will be given to community involvement. One scholarship is awarded every 4 years.	The friends and family of Ashoki Sujanani, BScEngSE 1978.

UNRESTRICTED	Dr. Jed B. Sutherland Memorial Scholarship	Unrestricted.	$4,250.	Variable.	1 to 4 years.	Awarded to students who are graduates of a Carleton County high school. Selection is made on the basis of scholastic attainment, financial need and extracurricular activities.	The Family of Dr. Jed B. Sutherland, BA '39 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Claude Taylor Scholarship	Unrestricted.	$4,000.	1.	1 year.	Awarded to a student beginning an undergraduate degree program directly from high school. Recipient must be a Canadian citizen or Permanent Resident. Selection is based on academic achievement, financial need and community involvement.	Air Canada, in honour of Salisbury, NB native Claude Taylor (DCL 1980) and the important role he played at Air Canada from 1970 through to the 1990s.
UNRESTRICTED	TD Insurance Meloche Monnex Entrance Scholarship	Unrestricted.	$1,100.	2.	1 year.	Awarded to students beginning their first undergraduate degree program. Selections are made on the basis of scholastic attainment.	TD Insurance Meloche Monnex.
UNRESTRICTED	Thomas Family Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a graduate of a New Brunswick high school who is beginning an undergraduate degree program at UNB. Selection is based on academic achievement and financial need.	Karen and Gaetan (BSE EE 1982) Thomas.
NURSING	Mary Ann Thomas Scholarship in Nursing	Nursing.	Variable.	2.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and is beginning a Nursing degree program at UNB. Selection is based on scholastic attainment and financial need.	The estate of the late Dr. Ivan H. Crowell and Mrs. Mildred A. Crowell and the New Brunswick University Opportunities Fund.
ENGINEERING	Floyd Toole Scholarship	Engineering.	$10,000.	1.	4 years.	Awarded to a Fredericton campus student who is beginning the Bachelor of Science in Engineering degree program. Selection will be based on academic achievement and financial need. The recipient must have graduated from a high school in Atlantic Canada, with preference given to a New Brunswick Student. One award will be active at any given time.	Dr. Floyd Toole (BScEE 1960).
UNRESTRICTED	Brock A. Turner Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who is a graduate of Sussex High School and is beginning an undergraduate degree program at UNB. One scholarship will be awarded every two years.	Mrs. Brock A. Turner.
UNRESTRICTED	UNB - International Baccalaureate Scholarship	Unrestricted.	Variable.	Multiple.	4 years.	Awarded to students who are completing or have completed an International Baccalaureate Diploma and are beginning an undergraduate degree program at UNB. Selection is based on academic achievement.	
UNRESTRICTED	UNB Turnaround Achievement Award	Unrestricted.	Up to $5,000.	1 or more.	1 year.	Awarded to students who are recipients of Kingswood's Turnaround Achievement Award and attend UNB on a full-time basis during the following fall term.	The Univeristy.
UNRESTRICTED	UNB Ironmen Rugby Football Club Alumni Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a Fredericton campus student who is enrolled in an undergraduate or graduate degree program. Selection is based on academic attainment. Open to transfer students. Preference will be given to students with financial need, who have prior rugby experience (high school and/or provincial teams).	UNB Rugby Football Alumni.

UNRESTRICTED	UNB Leadership Scholarship	Unrestricted.	$2,500.	2.	1 year.	Open to students beginning a degree program directly from high school who have demonstrated successful academic achievement. Candidates must have played a leadership role in extracurricular activities such as community service, student government, athletics or the visual or performing arts.	The Univeristy of New Brunswick.
UNRESTRICTED	UNB Loran Award	Unrestricted.	Tuition & fees.	1 or more.	4 years.	Awarded to a student who has been selected as a Loran Award recipient by the Canadian Merit Scholarship Foundation and is beginning an undergraduate degree program.	The University.
UNRESTRICTED	UNB Recognition Scholarship - Duke of Edinburgh Award	Unrestricted.	$2,500.	6.	1 year.	Awarded to students beginning a degree program directly from high school who have participated in programs the Duke of Edinburgh program. Selection will be based on scholastic attainment.	The University of New Brunswick.
UNRESTRICTED	UNB - Shad Valley Scholarship	Unrestricted.	Variable.	Multiple.	4 years.	Awarded to students who participated in Shad Valley and are beginning an undergraduate degree program at UNB. Selection is based on academic achievement.	The University of New Brunswick.
UNRESTRICTED	University Faculty & Staff Entrance Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Students beginning an undergraduate degree program. Selections are made on the basis of scholastic attainment and financial need.	Contributors to the University Faculty/Staff Fund.
UNRESTRICTED	William Van Horne Family Scholarship	Unrestricted.	$3,000.	1.	1 year.	Awarded to a student who has graduated from Fundy High School and is beginning an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	William Van Horne, BBA 1999, LLB 2002, Fundy High 1991 and the New Brunswick University Opportunities Fund.
BUSINESS & MANAGEMENT	Clifford G. Warner Scholarship	Business.	Variable.	1.	4 years.	Awarded to a Saint John campus student who has been accepted to a degree program in the Faculty of Business. Selection is based on academic achievement, financial need and substantial involvement in community activities. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Transfer students are eligible to be considered. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Family and friends of Clifford G. Warner, a distinguished citizen of Saint John who died in 2010. A contribution was also received from the New Brunswick University Opportunities Fund.
SCIENCE	Mary Eileen Washburn Memorial Scholarship	Science.	Variable.	1.	1 year.	Awarded to a student beginning a Bachelor of Science degree program on the Fredericton campus, who is a graduate of a Fredericton high school. Selection is made on the basis of scholastic attainment and financial need.	Family and friends of the late Mary Eileen Washburn and the New Brunswick University Opportunities Fund.
FORESTRY	Mark Way Memorial Scholarship in Forestry and Environmental Management	Forestry and Environmental Management.	Variable.	1.	4 years.	Awarded every four years, on the basis of scholastic attainment and financial need, to a student on the Fredericton campus in the Faculty of Forestry and Environmental Management.	The late Mark Way, BA, UNB 1972.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Irene Weaver Memorial Entrance Scholarship	Nursing.	$650.	1.	1 year.	Awarded to a deserving student entering the Nursing Program on the Saint John campus. Selection is made on the basis of financial need and scholastic attainment.	The late Irene Weaver.

UNRESTRICTED	William Webster Scholarship	Unrestricted.	$5,000.	1.	1 year.	Awarded to a student who has graduated from Sussex High School and is beginning an undergraduate degree program on the Fredericton campus. Selection is based on scholastic achievement and extra-curricular activities.	William W. D. Webster (BA 1959).
UNRESTRICTED	UNB - Shad Valley Scholarship	Unrestricted.	Variable.	Multiple.	4 years.	Awarded to students who participated in Shad Valley and are beginning an undergraduate degree program at UNB. Selection is based on academic achievement.	The University of New Brunswick.
UNRESTRICTED	L. A. Wilmot Scholarship	Unrestricted.	$375.	1.	1 year.	Male student of exceptional moral character and of good mental ability. His circumstances must be such as to render pecuniary aid necessary towards obtaining a university education. The scholarship has been assigned in competition among pupils in Saint John.	The late Mrs. L.A. Wilmot.
UNRESTRICTED	Beatrice Small Wilson Bursary	Unrestricted.	$1,000.	4.	1 year.	Awarded to students who show academic promise and need financial assistance from Saint John, Albert, Kings, or Charlotte Counties, and who do not hold any other major bursaries or scholarships.	The Charles Wilson Charitable Foundation Inc.
UNRESTRICTED	C.N. Wilson Bursary	Unrestricted.	Min. $1,000.	Variable.	1 year.	Awarded to Saint John campus students who show academic promise and need financial assistance, who are from Saint John, Albert, Kings, or Charlotte Counties, and who do not hold any other major bursaries or scholarships.	Greater Saint John Community Foundation.
UNRESTRICTED	David & Elizabeth (Paterson) Wilson Family Scholarship	Unrestricted.	$4,000.	1.	4 years (with poss. of funding for fifth year).	Awarded to a student who has graduated from a New Brunswick high school and is beginning an undergraduate degree program on the Fredericton campus. Selection will be based on academic achievement, financial need and community involvement. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. One scholarship will be active in any given year.	David Wilson (BSE CE 1963) and Elizabeth (Paterson) Wilson (BA 1962) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Rhoda and Ronald Woodworth Scholarship	Unrestricted.	$6,500.	1 or more.	Up to 4 years.	Awarded to Saint John campus students who are graduates of a Saint John high school, residents of the City of Saint John, Canadian citizens and enrolled in an undergraduate degree program. Selection is based on scholastic attainment and financial need.	The estate of Rhoda Woodworth and the New Brunswick University Opportunities Fund.
NURSING	Jane Margaret Worth Memorial Bursary	Nursing.	$1,000.	1.	4 years.	Awarded on the basis of financial need to a student enrolled in the Bachelor of Nursing degree program who has demonstrated successful academic performance. Consideration will be given to the student's involvement in community activities. The recipient must be a New Brunswick resident, according to the NB Provincial Government's Student Financial Services guidelines. Only one scholarship will be awarded every 4 years.	This bursary was established to honour Jane Worth BN 1970, a dedicated nurse and health care administrator with donations from Jane's family and friends as well as a matching gift from the New Brunswick University Opportunities Fund.

SCHOLARSHIPS FOR HIGH SCHOOL AND CONTINUING STUDENTS

FACULTY	AWARD NAME	field	value	number	duration	conditions	donor
NURSING	50th Anniversary Scholarship in Nursing	Nursing.	Variable.	1 or more.	1 year.	Awarded to a First Nations student enrolled in the Faculty of Nursing on the Fredericton campus. Selection is based on scholastic attainment.	Alumni and Friends of the Faculty of Nursing.

ENGINEERING	Sydney Acker Scholarship	Engineering.	$6,000.	1.	1 year.	Awarded to a student who is enrolled in Bachelor of Science in Engineering degree program (any discipline). Selections are made on the basis of scholastic attainment and financial need.	The family and friends of Sydney Acker, BScEng (Civil) 1944.
ENGINEERING	AEE Canada East Founders Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the second year of Bachelor of Science in Engineering (any discipline). Selection will be based on academic achievement. The recipient must demonstrate interest and innovation in the energy sector. Preference will be given to students in the TME Diploma Program.	Association of Energy Engineers Canada East.
ENGINEERING	William and Edward Akerley Memorial Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded primarily on the basis of scholastic attainment to Fredericton campus Civil Engineering students.	Mrs. B.E. Akerley and family, in memory of her late husband, William (BScCE 1932) and his late brother, Edward (BScCE 1923).
MULTIPLE	Dr. A. Gordon Alexander Scholarship	Chemistry, Physics, Chemical Engineering, Electrical Engineering, or Computer Science.	$10,000.	1.	Up to 3 years.	Awarded to a Fredericton campus student who has completed the requirements for the first year of an undergraduate degree on the Fredericton campus and is enrolled in Chemistry, Physics, Chemical Engineering, Electrical Engineering or Computer Science. The scholarship will be renewed annually for a maximum of three years, providing the recipient maintains high academic achievement (Dean's List or equivalent), full-time enrollment and demonstrates continuing financial need. The recipient must be a Canadian citizen and a graduate of a New Brunswick high school. Selection is based on academic achievement and financial need. The recipient may not hold additional scholarship at any time which exceed $2000 in value. One scholarship will be active in any given year.	Dr. A. Gordon Alexander (B.Sc. 1967 UNB, Ph.D. 1972 U of Alberta).
UNRESTRICTED	Aliant Centennial Scholarship	Unrestricted.	Variable.	2.	1 year.	A scholarship will be awarded to a student on the Fredericton campus; the second scholarship will be awarded to a student on the Saint John campus. Open to students who are either entering or have completed at least the normal requirements for the first year of a degree program at UNB. Selection is made on the basis of scholastic attainment with consideration given to financial need.	Aliant Telecom.
UNRESTRICTED	David & Margaret (Bunting) Allen Scholarship	Unrestricted.	$4,500.	2.	1 year.	Awarded to a student enrolled in an undergraduate degree program. One scholarship will be awarded to a graduate of St. Stephen High School and the other to a graduate of Fredericton High School. Selection is based on academic achievement, financial need and community involvement.	David (BSE ME 1961) and Margaret (Bunting) Allen.
UNRESTRICTED	Alumni Merit Award	Unrestricted.	$500.	Variable.	1 year.	Awarded to a student demonstrating a special talent and showing successful academic performance. The student will be expected to use this special talent to contribute to the University community.	The Associated Alumni of the University of New Brunswick.
UNRESTRICTED	George & Elaine Andrews Memorial Scholarship in Athletics	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students who are members of a UNB Reds team. Selection is based on academic achievement in combination with athletic achievement. Preference will be given to students who are studying Forestry.	The estate of George (BSF 1950) and Elaine Andrews.

FORESTRY	George & Elaine Andrews Memorial Scholarship in Forestry	Forestry.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students in the Bachelor of Science in Forestry. Selection is based on academic achievement, with preference given to those who best combine academic and athletic achievement.	The estate of George (BSF 1950) and Elaine Andrews.
UNRESTRICTED	Anonymous Donor Scholarship	Unrestricted.	Approx. $200.	1.	1 year.	A needy and deserving student of UNB.	Anonymous.
ENGINEERING	Paul Antle Scholarship in Chemical Engineering	Chemical Engineering.	$1,250.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering (Chemical) degree program. Selection will be based on scholastic achievement and financial need. Preference will be given to a student from Newfoundland.	Paul G. Antle, B.Sc. (Memorial '85), M.Eng.(ChE '87).
FORESTRY	Roxanne and Peter Archibald Scholarship in Forestry	Forestry.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program in the Faculty of Forestry. Selection will be made on academic achievement and financial need.	Roxanne (BSF 1981) and Peter Archibald (BSF 1981)
UNRESTRICTED	Dr. Wiktor Askanas Scholarship	Unrestricted.	$1,000	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program. Selection will be based on academic achievement. The recipient must be a single parent.	Dr. Wiktor Askanas.
ENGINEERING	Edward Bamford Scholarship in Engineering	Engineering.	Min. $2,000.	1.	1 year (may be renewed).	Awarded to a student from Northumberland County who is enrolled in the Bachelor of Science in Engineering degree program, with preference given to a student enrolled in Civil Engineering. Selection will be based on scholastic attainment and financial need.	Edward Bamford and the New Brunswick University Opportunities Fund.
ARTS	Carolyn Bassett Memorial Scholarship	Political Science.	Min. $3,000.	2.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirement for the second year of the Bachelor of Arts degree program and is intending to major or honour in Political Science. Selection will be based on academic achievement. Preference will be given to International Development Studies students studying the political economy of the majority world.	Family and friends of Carolyn Bassett.
UNRESTRICTED	David and Marian Bassett Scholarship	Unrestricted.	$7,000.	1.	1 year.	Awarded to a student who is a resident of the Bahamas. Selection will be based on scholastic attainment. Transfer students may also be considered.	David and Marian Bassett.
UNRESTRICTED	John F. Bassett Memorial Scholarship	Unrestricted.	Min. $2,000.	2 per year.	1 year.	Open to graduates of any high school in Ontario. Awarded primarily for scholastic attainment, but extracurricular activities, sports achievement and need may also be taken into account.	Dr. Fredrik S. Eaton.
UNRESTRICTED	Brian and Vicky Baxter Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program on the Fredericton campus who is, or will be, a member of the University's UNB Reds men's hockey team. The recipient must have a minimum 80% entering average or a 3.5 grade point average. Consideration may be given to financial need. This award is open to transfer students.	Brian (BBA 1968) and Vicky Baxter.
ARTS	Chub and Estelle Baxter Scholarship	Arts.	$1,500.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program in the Faculty of Arts. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Chub & Estelle Baxter and the New Brunswick University Opportunities Fund.
MANAGEMENT	BAUS Merit Award	Business.	$500.	1.	1 year.	Awarded to a student who is enrolled in the Business Administration degree program on the Fredericton campus. Selection will be based on successful academic performance (must achieve at least a 3.0 CGPA) and financial need. The reicipient must demonstrate involvement in the community.	Business Administration Undergraduate Society (BAUS).

UNRESTRICTED	Jeffrey J. Beairsto Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a permanent resident or indigenous student enrolled in an undergraduate degree program. Selection will be based on financial need and academic achievement. Preference will be given to students enrolled in the Bachelor of Science in Engineering.	Jeffrey Beairsto (BscME 1997) along with friends and family.
UNRESTRICTED	Fannie Chandler Bell Scholarship	Unrestricted.	Up to $2,500.	Variable.	Up to 2 years.	Students who show academic promise and need financial assistance.	The late Fannie Chandler Bell.
ARTS	Eleanor Belyea Wees Memorial Scholarship	Arts.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program in the Faculty of Arts. Selection is based on academic achievement. Consideration may be given to financial need. This award is open to transfer students.	Eleanor Belyea Wees, BA 1945 and Eric Wees.
FORESTRY	John & Rita Bent Scholarship	Forestry.	Variable.	Variable.	1 year.	Awarded to a student enrolled in an undergraduate degree program in the Faculty of Forestry and Environmental Management. Selection is based on academic achievement. Consideration may be given to financial need and/or involvement in extracurricular activities.	Estate of Rita Bent.
UNRESTRICTED	Bermuda Alumni Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment to students from Bermuda enrolled in a degree program at UNB.	Bermuda Alumni.
ENGINEERING	Ed and Bernadette Biden Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering degree program (any discipline). Selection will be based on academic achievement. The recipient must demonstrate community involvement.	Friends and family of Ed (BSE ME 1978) and Bernadette (BSc 1981) Biden.
ENGINEERING & SASE	Bird Construction Scholarship	Engineering.	$3,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering degree program. Selection will be based on academic achievement. Preference will be given to a female indigenous student.	Bird Construction.
MULTIPLE	Iris Bliss Scholarship	Kinesiology or Science.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Science in Kinesiology or the Bachelor of Science degree program and is a graduate of Fredericton High School. Selection will be based on academic achievement and financial need with consideration given to participation in sport/dance or involvement in school or local community activities. In the event that there are no Fredericton High School graduates considered as eligible for this scholarship, then Leo Hayes High School graduates will be considered.	Iris E.C. Bliss and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Tim Bliss Scholarship in Men's Hockey	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who is a member of the UNB Reds men's hockey team. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. The award is open to transfer students as well.	Tim Bliss (BSE CE 1954).
NURSING	Maisie Block (Downing) Memorial Scholarship	Nursing.	$1,000.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Nursing Advanced Standing degree program at the Moncton site. Selection will be based on academic achievement. Preference will be given to groups that are currently underrepresented in the Faculty of Nursing including Indigenous, International students and men.	Friends and family of Maisie Block (nee Downing) (Moncton School of Nursing 1937).
UNRESTRICTED	BMO Financial Group Soccer Award	Unrestricted.	$5,000.	10.	1 year.	Awarded to Fredericton campus students who are members of the UNB Reds soccer teams. Five awards will be provided to the women's team and five awards will be provided to the men's team. Selections are based on academic achievement (a minimum 2.0 grade point average for returning students or 80% average for entering students, as per U SPORTS regulations) and	BMO Financial.

						athletic excellence. These awards are open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	
ENGINEERING	Richard J. Boissonnault Scholarship in Engineering	Engineering.	$4,000.	1.	1 year.	Awarded to a student who is a graduate of a Francophone New Brunswick high school and has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering program. Selection will be based on academic achievement and community involvement. Preference given to a student with financial need in Civil Engineering.	André J. Boissonnault.
UNRESTRICTED	Boudreau Family Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student who has graduated from Fundy High School and is enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Suzanne Boudreau (BBA 1995) and the New Brunswick University Opportunities Fund.
COMPUTER SCIENCE	Robert Boyce Scholarship	Computer Science.	$5,000.	1.	1 year.	Awarded to a woman student enrolled in the Bachelor of Computer Science degree program on the Fredericton campus. Selection is based on academic achievement. Preference will be given to a student who demonstrates an interest in cybersecurity.	Robert Boyce (BSc 1999).
UNRESTRICTED	Boyer Scholarship	Unrestricted.	Min. $1,300.	1.	1 year.	Awarded to students who are residents of Carleton County, New Brunswick, and who are children of veterans of active service in either First or Second World Wars.	The late Miss Bertha Boyer.
COMPUTER SCIENCE	Boyle Reid Scholarship	Unrestricted.	Min. $1,000.	1.	1 year.	Awarded to a Fredericton campus student who has demonstrated academic achievement (minimum 2.0 scholarship GPA for returning students, or 80% average for entering students, as per U SPORTS regulations) and special athletic ability in a varsity sport. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours. Preference will be given to a student enrolled in an undergraduate degree program in the Faculty of Computer Science.	Wayne Boyle (BSCCS 1983) and Elizabeth Reid Boyle (BN 1985).
UNRESTRICTED	Stephen Branch Memorial Scholarship	Unrestricted.	$750.	1.	1 year.	Awarded to a student who is enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The estate of Stephen Branch, BA 1951, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	E. David Brannen Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program. Selection is based on academic achievement. Preference will be given to a student enrolled in the co-op program. Consideration may be given to financial need and/or extracurricular activities.	Friends and family of E. David Brannen.
UNRESTRICTED	Dr. G. F. Gregory Bridges Scholarship	Unrestricted.	Min. $500.	Variable.	1 year.	Selections are made on the basis of scholastic attainment and financial need.	The late Dr. G.F. Gregory Bridges.
MULTIPLE	N. Myles Brown Natural Science Scholarship	Science.	Variable.	1.	1 year.	Students who are either beginning an undergraduate degree program at UNB or have completed the normal requirements for the first year of the program in which they are registered. Applicants must intend to pursue their studies in any field of science/applied science concerned with ecology. Selections are made on the basis of scholastic and other attainments and financial need.	The Woodstock Museum Inc.

UNRESTRICTED	Alice Brown Wallace Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program. Selection will be based on academic achievement and financial need. The recipient must be from Carleton or York county in New Brunswick.	Dr. F. Eileen Wallace (BA 1944, DLITT 2001).
MANAGEMENT	Business Administration 25th Anniversary Scholarship	Business Administration.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to Fredericton campus students in the BBA program.	Contributions by graduates, faculty, staff, business firms and individuals in recognition of the 25th anniversary of the first BBA graduates from UNB.
UNRESTRICTED	Gladys Callaghan Memorial Scholarship	Unrestricted.	Min. $500.	1.	1 year.	Awarded to a student who is a graduate of Sugarloaf High School with preference given to a student beginning an undergraduate degree program directly after high school. Selection is based on scholastic attainment and financial need.	Dean Callaghan, in honour of his mother and the New Brunswick University Opportunities Fund.
ENGINEERING	Alastair D. Cameron Memorial Scholarship	Civil Engineering.	$9,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Science in Engineering (Civil) degree program. Selection will be based on scholastic achievement and financial need.	Mrs. Audrey Cameron.
MULTIPLE	Gerald A. Campbell Memorial Scholarship	Science, Engineering, Forestry, or Forest Engineering.	Variable.	Variable.	1 year.	Awarded to students at UNB on the basis of scholastic attainment and financial need. Preference may be given to graduates of New Brunswick high schools.	The late Gerald A. Campbell and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Helen Neill Campbell Merit Award	Unrestricted.	Not to exceed tuition and compulsory fees.	1 or more.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for entering students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Dr. D. Chester Campbell, BScCE 1934, D.Sc. 1982 and his wife, Mrs. Helen Neill Campbell, BA 1934.
UNRESTRICTED	Vivian and David Campbell Family Foundation Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students on the basis of scholastic attainment and financial need. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines.	The Vivian and David Campbell Family Foundation and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Canaport LNG Scholarship	Unrestricted.	$5,000.	2 or more.	1 year.	Awarded to students who are enrolled in an undergraduate degree program on the Saint John campus. Selection is based on academic achievement, financial need and community involvement.	Canaport LNG.
ENGINEERING FORESTRY	Lino Celeste Scholarship	Engineering or Forestry.	$3,000.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Science in Engineering (any discipline) or Bachelor of Science in Forestry degree program. Selection will be based on academic achievement and financial need.	Dr. Lino Celeste (BSE EE 1960, DSC 1996).
MULTIPLE	Challenger Geomatics Scholarship	Geodesy and Geomatics Engineering.	$2,500.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering (Geodesy and Geomatics). Selection will be based on academic attainment.	Challenger Geomatics

SECTION C: SCHOLARSHIPS, PRIZES AND AWARDS

MULTIPLE	Ernest deWitt Chipman Memorial Scholarship	Philosophy in Interdisciplinary Leadership or International Development Studies.	Approx. $1,000.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick High School and is enrolled in the Bachelor of Philosophy in Interdisciplinary Leadership or majoring in International Development Studies in the Bachelor of Arts on the Fredericton campus or International Studies on the Saint John campus. Selection will be based on academic attainment and financial need. Preference will be given to a student involved in extra-curricular activities.	A.M. Chipman, his father; Peter and Patricia Chipman, his brother and wife; family & friends and the New Brunswick University Opportunities Fund.
COMPUTER SCIENCE	Eldon and Maxine Clair Bursary in the Faculty of Computer Science	Computer Science.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to part-time or full-time, graduate or undergraduate students on the Fredericton campus who are enrolled in a degree program in the Faculty of Computer Science. Recipients must demonstrate successful academic performance.	The estate of Eldon and Maxine Clair.
COMPUTER SCIENCE	Eldon and Maxine Clair Scholarship in Computer Science	Computer Science.	Variable.	1 or more.	1 year.	Awarded to Fredericton campus students enrolled in an undergraduate degree program in the Faculty of Computer Science. Selection is based on academic achievement. Consideration may be given to financial need and/or extra-curricular activities. This scholarship is open to transfer students.	The estate of Eldon and Maxine Clair.
UNRESTRICTED	Enid Hager Clarke Memorial Bursary - UNBF	Unrestricted.	Approx. $500.	Multiple.	1 year.	Awarded on the basis of financial need to students on the Fredericton campus who have graduated from a high school in Saint John County or Kings County, New Brunswick, and have achieved successful academic performance.	The late Enid Hager Clarke.
UNRESTRICTED	Enid Hager Clarke Memorial Bursary - UNBSJ	Unrestricted.	Approx. $500.	Multiple.	1 year.	Awarded on the basis of financial need to students on the Saint John campus who have graduated from a high school in Saint John County or Kings County, New Brunswick and have achieved successful academic performance.	The late Enid Hager Clarke and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Class of 1936 Scholarship	Unrestricted.	$1,000.	1.	1 year.	Selections are made on the basis of scholastic attainment and financial need.	The Class of 1936.
UNRESTRICTED	Class of 1950 Scholarship	Unrestricted.	$4,300.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program. Selection will be based on scholastic attainment and financial need.	The Class of 1950.
UNRESTRICTED	Class of 1968 Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program on the Fredericton campus. The recipient must demonstrate successful academic performance.	The Class of 1968.
UNRESTRICTED	Class of 1987 Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to students enrolled in an undergraduate degree program on the Fredericton campus. Selections are made on the basis of scholastic attainment and financial need, with consideration given to participation in extracurricular activities.	The Class of 1987.
UNRESTRICTED	Peter Coates Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student who has graduated from JMA Armstrong High School and is enrolled in an undergraduate degree program. Selection is based on academic achievement. Consideration may be given to the student's involvement in extracurricular activities and/or financial need.	Peter Coates, BBA 1983.
UNRESTRICTED	Florence Julia Colpitts Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students who are graduates of a rural New Brunswick high school located outside any of New Brunswick's incorporated cities. Selections are made on the basis of financial need and satisfactory academic performance.	The estate of Philip Colpitts and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Geoff and Rachelle Colter Volleyball Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a Fredericton campus student who is a member of the UNB Reds men's volleyball team. Selection will be based on academic achievement (a minimum 2.0 grade point average for returning students or 80% average for entering students, as per U SPORTS regulations) and athletic excellence. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Rachelle and Geoffrey Colter (BScE 1994).
BUSINESS ADMINISTRATION	Dr. Tony and Elizabeth Comper Scholarship	Business Administration.	$1,125.	2.	1 year.	Awarded to students who are enrolled in the Bachelor of Business Administration degree program and are graduates of a Canadian high school. One scholarship is awarded to a Fredericton campus student and one to a Saint John campus student. Selection is based on academic achievement.	Dr. Tony Comper, D.Litt. '05, and Elizabeth Comper.
COMPUTER SCIENCE	Computer Science 40th Anniversary Scholarship	Computer Science.	Variable.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program in the Faculty of Computer Science. Selection is based on scholastic achievement.	Alumni and friends of the Faculty of Computer Science.
COMPUTER SCIENCE	Computer Science Faculty and Staff Scholarship	Computer Science.	Variable.	1 or more.	1 year.	Awarded to a Fredericton campus student enrolled an undergraduate degree program in the Faculty of Computer Science. Selection is based on academic achievement.	Faculty and staff of the Faculty of Computer Science, UNB Fredericton.
FORESTRY	Dr. Mary Conley Scholarship	Environment & Natural Resources.	Variable.	Variable.	1 year.	Awarded to a student entering the Bachelor of Science in Environment and Natural Resources. Selection will be based on academic achievement. This scholarship is open to transfer students.	Dr. Mary Conley BSc 1966.
MULTIPLE	Cooling Family Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program. The recipient must be a graduate of Miramichi Valley High School. Selection will be based on academic achievement and financial need. Preference will be given to a student enrolled in the Bachelor of Education or the Bachelor of Kinesiology.	Phyllis (BPE 1975, BED 1979, MED 1998), Doug, Alexander and Nicholas (BA 2013) Cooling.
MULTIPLE	Howard Copp Memorial Bursary	Forestry, Nursing, or Education.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is enrolled in the Bachelor of Science in Forestry, Bachelor of Nursing or Bachelor of Education (Concurrent or Consecutive) degree program and has demonstrated successful academic performance. Preference will be given first to graduates of North and South Esk Regional High School, then to graduates of Miramichi Valley High School.	The late Lillian Copp, in memory of her father, Howard Copp.
UNRESTRICTED	Edna Isabel Corbett-Wile Scholarship	Unrestricted.	Approx. $12,000.	1 or more.	1 year.	Awarded to female students who are enrolled in an undergraduate degree program, have graduated from Oromocto High School and are from Queens County with preference given to those from Gagetown. Selection is based on academic achievement. Consideration may be given to financial need.	The estate of Byron Wile.
UNRESTRICTED	David and Lillian Coughey Family Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who is enrolled in an undergraduate degree program on the Fredericton campus. The recipient must be a graduate of Fredericton High School, Leo Hayes High School or Oromocto High School. Selection will be based on academic achievement and involvement in extracurricular activities.	Friends and Family of the late David Coughey (BA 1934, BEd 1952) and Lillian Coughey.

UNRESTRICTED	Carlton C. Covey Scholarship	Unrestricted.	Variable.	Multiple.	Up to 4 years.	Open to Fredericton campus students who have graduated from a New Brunswick high school. Selection will be based on scholastic achievement and financial need.	The estate of Lillian E. Covey and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. John Z. and Helen M. Currie Memorial Scholarship	Unrestricted.	$250.	1.	1 year.	Student with high scholastic standing who needs financial help.	The late John Bayard Currie.
UNRESTRICTED	Robert P. Dann Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student who is enrolled in an undergraduate degree program. Selection is based on scholastic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Robert P. Dann, BA 1937 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Linda Darling Memorial Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program. Selection will be based on scholastic achievement.	John Miller, MSc'84.
MULTIPLE	Dr. Arun Datta and Jayanti Datta Scholarship for Economics	Economics.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the first year of the Bachelor of Arts or Bachelor of Business Administration, who is majoring in Economics. Selection is made primarily on the basis of academic achievement.	Family and friends of Dr. Arun and Jayanti Datta.
NURSING	DECH Auxiliary Kathleen (Kay) Currie Memorial Scholarship	Nursing.	$2,000.	1.	4 years.	Awarded to a student entering the Bachelor of Nursing degree program on the Fredericton campus. Selection will be based on academic achievement and financial need. Preference will be given to students who are graduates of a high school in York, Victoria, Carleton or Sunbury Counties. One scholarship will be awarded every 4 years.	Kathleen Currie, life member of the DECH Auxiliary.
COMPUTER SCIENCE	George F. Doherty Memorial Scholarship	Computer Science.	$2,500.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Computer Science degree program. Selection will be based on academic achievement, financial need, and demonstration of entrepreneurial spirit.	The Doherty Family through the McKenna Institute.
NURSING, SASE	Gwendolyn Dorcas Scholarship	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to a student who is enrolled in an undergraduate degree program and has graduated from Stanley High School. Preference will be given to a student enrolled in the Bachelor of Nursing degree program. Selection will be based on academic achievement and financial need.	Gwen Ferguson (Tuttle, VPH School of Nursing 1969, BN 1993) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Satya Vati & Som Dutt Dosaj Memorial Scholarship	Unrestricted.	Approx. $1,000.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need. Consideration may be given to extracurricular activities and/or community involvement.	Dr. Vishu and Abha Dosaj & family.
ARTS	Doxbow Scholarship	Arts.	$1,500.	1.	1 year.	Awarded to a student who has graduated from Tobique Valley High School and is enrolled in an undergraduate degree program in the Faculty of Arts. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Doxbow Inc. and the New Brunswick University Opportunities Fund.

NURSING	Dr. Everett Chalmers Hospital Auxiliary Scholarship for Mature Nursing Students	Nursing.	Variable.	Variable.	1 year.	Awarded to entering or continuing mature students who are graduates of a high school in York, Victoria, Carleton or Sunbury Counties enrolled in either the Basic or Post RN Nursing Program.	Dr. Everett Chalmers Hospital Auxiliary and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. Francis Pang's Confucius Scholarship	Unrestricted.	Variable.	Multiple.	1 Year.	Awarded to students who are enrolled in an undergraduate degree program at UNB. Selection will be based on academic achievement.	Dr. Francis Pang.
UNRESTRICTED	John A. H. Duffie Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded primarily on the basis of scholastic attainment.	The late John A.H. Duffie.
EDUCATION	Barbara Duffy Memorial Scholarship	Education.	$200	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Education degree program on the Fredericton campus. Selection will be based on academic achievement. Consideration may be given to financial need and/or extracurricular activities.	Friends and family of Barbara Duffy.
EDUCATION	Karen Duffy Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a student from Blackville High School who is beginning an undergraduate degree program on the Fredericton campus. Preference will be given to a student entering the Bachelor of Education program.	Family and friends of the late Karen Duffy.
UNRESTRICTED	Kenneth Joseph Dunn/Allan McInerney Memorial Scholarship	Unrestricted.	Min. $350.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need.	Friends of the late Kenneth Joseph Dunn and Allan McInerney.
EDUCATION	Barbara Anderson Dunphy Scholarship	Education.	$500.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Education degree program. Selection will be based on academic achievement.	Barbara Dunphy (BA 1981, BEd 1986, MED 1994).
UNRESTRICTED	Malcolm Early Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a male student on the Fredericton campus who has demonstrated high academic achievement (3.0 assessment year GPA for returning students, and 80% average for entering students), special athletic ability in the sport of men's varsity volleyball as well as leadership abilities in his surrounding community. This award is open to transfer students.	UNB Volleyball Alumni.
ENGINEERING	L. Ralph Elliott - CE Class of 1964 Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program and is a graduate of a rural New Brunswick high school located outside any of N.B.'s incorporated cities. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family, friends and classmates of L. Ralph Elliott (BSE CE 1964) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Emmerson Family Scholarship	Unrestricted.	$2,500.	2.	1 year.	Awarded to students who are enrolled in an undergraduate degree program at the University of New Brunswick and are residents of Cumberland County, Nova Scotia or either Westmorland or St. John County, New Brunswick. Selection is based on scholastic attainment.	Emmerson Packaging.
FORESTRY	Envirothon Scholarship	Forestry or Environment and Natural Resources.	$500.	Up to 5.	1 year.	Awarded to Fredericton campus students who have been accepted to an undergraduate degree program in the Faculty of Forestry and Environmental Management and have participated in an Envirothon team in Canada or United States. Envirothon is an environmental competition program for teams from high schools, administered by the Canadian Forestry Association of New Brunswick provincially and sponsored by Canon (at the North American level). Selection is based on academic achievement. Transfer students may be considered.	

ENGINEERING	Rudy & Theresa Esterbauer Scholarship	Mechanical Engineering.	Up to $5,000.	1 or more.	1 year.	Awarded to Fredericton campus students who are in the Bachelor of Science in Engineering (Mechanical) degree program. Selection is based on academic achievement. Preference will be given to students transferring from other institutions.	Rudy and Theresa Esterbauer.
MULTIPLE	George Cedric Ferguson Engineering Memorial Bursary	Chemical, Civil, Electrical or Mechanical Engineering.	Variable.	Min. 1.	Up to 5 years.	Awarded on the basis of financial need with consideration given to scholastic attainment to students entering the Chemical, Civil, Electrical or Mechanical Engineering degree program. Preference is given to students from the Tracadie-Sheila area.	The late George Cedric Ferguson.
ARTS	Karl Land Fiddes BA 1962 Memorial Scholarship in Arts	Arts.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to students in the undergraduate Bachelor of Arts degree program.	The late Karl Land Fiddes
MULTIPLE	Karl Land Fiddes BA. 1962 Memorial Scholarship in Science	Science.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to students in the undergraduate Bachelor of Science degree program.	The late Karl Land Fiddes.
UNRESTRICTED	Ernest L. and Lena M. Flewelling Scholarship	Unrestricted.	$1,500.	1.	1 year.	Awarded to a student in an undergraduate degree program who is a graduate of a New Brunswick High School. Selection is made on the basis of academic achievement and financial need.	Ernest L. (BA 1945, BED 1961) and Lena M. Flewelling.
FORESTRY	Forestry Staff & Alumni Scholarship	Forestry or Forest Engineering.	Variable.	Variable.	1 year.	Awarded primarily on the basis of scholastic attainment to Fredericton campus Forestry or Forest Engineering students.	UNB Forestry and Forest Engineering staff and UNB alumni members.
FORESTRY	Forestry Undergraduate Scholarship	Forestry.	$1,250.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program in the Faculty of Forestry and Environmental Management. Selection is based on academic achievement. Consideration may be given to financial need and/or involvement in extracurricular activities.	Dave MacLean, former Dean of the Faculty of Forestry and Environmental Management, with donations from the Forging Our Futures campaign.
UNRESTRICTED	Sir George E. Foster Scholarship	Unrestricted.	Variable.	Multiple.	Up to 4 years.	Men and women who show scholastic promise and who need financial assistance to attend university. Open to students from all parts of Canada.	University General Endowment Fund.
COMPUTER SCIENCE	Dwight and Fay Fraser Scholarship	Computer Science.	$1,000.	1.	4 years.	Awarded to a student who is enrolled in the Bachelor of Computer Science or Bachelor of Science in Computer Science degree program. Selection will be based on academic achievement. Consideration may be given to financial need. Preference will be given to a graduate of Woodstock High School, Carleton North High School or Canterbury High School.	Dwight and Fay Fraser, through the McKenna Institute.
MULTIPLE	Fraser-Hruczkowski Scholarship	Arts or Engineering.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in an undergraduate degree program who has demonstrated leadership within the university community. Selection will be based on academic achievement and financial need. Preference will be given to a student from Nova Scotia.	Lynn (Fraser) (BA 1982) and Tom (MSE EE 1988) Hruczkowski.
UNRESTRICTED	Friends of the Seawolves	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Saint John campus undergraduate or graduate students who have demonstrated talent in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 65% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours, as required by the CCAA.	Alumni and friends of the Seawolves.

UNRESTRICTED	Friends of the UNB Reds - Women's Soccer Endowed Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	
UNRESTRICTED	Friends of the UNB Reds - Women's Swimming Endowed Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	UNB and Friends of the UNB Reds.
UNRESTRICTED	Friends of the UNB Reds Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who play for a UNB Reds team. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Alumni and friends of the UNB Reds.
COMPUTER SCIENCE	Dr. Jane Fritz Scholarship	Computer Science.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program in the Faculty of Computer Science. Selection is based on academic achievement and financial need. Where qualifications and need are similar, preference will be given to female students.	Family, friends, colleagues and students of former Dean of Computer Science, Dr. Jane Fritz.
UNRESTRICTED	Gale Memorial Scholarship	Unrestricted.	Min. $1,500.	1.	1 year.	Awarded to a student on the Saint John campus of UNB. Financial need is an important consideration in the awarding of the scholarship, as is successful academic performance.	The late Miss Catherine B. Gale, in memory of Harry Garfield Gale and Alberta Ballentine Gale.
UNRESTRICTED	Dr. Eric Garland Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student on the Fredericton campus who is registered in an undergraduate degree program. Selection is made on the basis of scholastic attainment and financial need with consideration given to students who have shown leadership qualities and community skills.	Family and friends of the late Dr. Eric C. Garland.
UNRESTRICTED	Eric C. & Marilyn M. Garland Athletic Award	Unrestricted.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and is enrolled in an undergraduate degree program at UNB. The recipient must be a member of a UNB varsity team and demonstrate exceptional leadership qualities. Selection is also based on financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines, and have at least an 80% entering average or a 2.0 grade point average in the previous year of study, as per U SPORTS regulations.	Marilyn Garland (BT '79) and Dr. Eric Garland (B.Sc. CE '54, B.Sc. ME '55), and the New Brunswick University Opportunities Fund.
ENGINEERING	Eric C. Garland Scholarship	Civil Engineering.	$1,000.	1.	1 year.	Awarded to a Canadian student enrolled in the Bachelor of Science in Engineering (Civil) degree program. Selection will be made primarily on the basis of the student's demonstrated leadership or community involvement and secondarily on the basis of the student's academic achievement and financial need.	Marilyn Garland, widow of Dr. Eric Garland.

MULTIPLE	A.C. Garrod Scholarship	Unrestricted.	$5,000.	2.	1 year.	Awarded to international students enrolled in an undergraduate degree program. One scholarship is to be awarded to a Fredericton campus student, with preference given to a student enrolled in the Bachelor of Philosophy in Leadership Studies and one scholarship is to be awarded to a Saint John campus student. Selection is based on academic achievement and financial need.	Multiple donors from across North America who wish to honour Professor Andrew C. Garrod, Dartmouth College.
COMPUTER SCIENCE	Georgio Gaudet Scholarship	Computer Science.	$10,000.	1.	1 year.	Awarded to a woman student enrolled in the Bachelor of Computer Science or Bachelor of Science in Computer Science degree program. Selection will be based on academic achievement.	Frank (LLB 1974, LLD 1988) and Julie (BEd 1974, MEd 1995) McKenna in honour of long-time public servant and friend, Georgio Gaudet.
UNRESTRICTED	Susanna Gerow Scholarship	Unrestricted.	Approx. $450.	1.	1 year.	A deserving student from the Counties of Queens or York, in New Brunswick who is in need of financial assistance.	The late Areta B. and Lenora M. Gerow.
NURSING	Anita Garbarino Girard Scholarship	Nursing.	$6,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to recipients that demonstrate excellence in the practice of Gerontological Nursing and in caring for elders.	Estate of Anita Garbarino Girard and the New Brunswick University Opportunities Fund.
MULTIPLE	Gordon J. Glencross Scholarship	Generally unrestricted, but preference may be given to Science or Engineering.	$500.	Min. 1.	1 year.	Awarded primarily on the basis of academic performance and financial need, to a student beginning an undergraduate degree program, who is a graduate of Bonar Law Memorial High School, Rexton, NB.	Mr. Gordon J. Glencross, BScCE, UNB 1950, Clairville, Kenty County, NB.
UNRESTRICTED	Anna Dawn Goddard Women's Hockey Scholarship	Unrestricted.	$4,000.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in women's hockey varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Anna Goddard (BT 1979, MEd 1986) and Frank Goddard (BSE CE 1967).
ENGINEERING	William Godfrey Scholarship	Engineering.	Variable.	1.	1 year.	Awarded to a student who has graduated from a New Brunswick High School and is enrolled in the Bachelor of Engineering degree program. Selection will be made on the basis of scholastic attainment and financial need.	William Godfrey and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Allan William Good Bursary Fund	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need and successful academic performance to students enrolled in an undergraduate degree program at UNB.	The estate of Allan William Good.
UNRESTRICTED	Allan William Good Scholarship Fund	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of academic achievement to students enrolled in an undergraduate degree program at UNB.	The estate of Allan William Good

MULTIPLE	Grant Science/Engineering Scholarship	Science or Engineering.	$500.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Science or the Bachelor of Science in Engineering (Mechanical) degree program. Selection will be made on the basis of scholastic achievement. The scholarship will alternate each year between the Bachelor of Science and the Bachelor of Science in Engineering (Mechanical) degree programs.	Christopher (BSE ME 1981) and Laura Grant.
UNRESTRICTED	Greenblatt Shore Memorial Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to students who have demonstrated successful academic performance.	The late Ilsa Janice Shore, the first woman Chair of UNB's Board of Governors, and her friends and family.
UNRESTRICTED	Greenblatt Shore Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to undergraduate students primarily on the basis of scholastic attainment.	The late Ilsa Janice Shore, the first woman Chair of UNB's Board of Governors, and her friends and family.
SCIENCE, APPLIED SCIENCE & ENGINEERING	J. Fraser Gregory Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded primarily on the basis of academic achievement. Preference will be given to students enrolled in the Bachelor of Science or the Bachelor of Science in Engineering degree program on the Saint John campus.	The late H. Olivia Spurling.
UNRESTRICTED	Ryan Guillermo Memorial Scholarship	Unrestricted.	$400.	1.	1 year.	Awarded to a Saint John campus student who demonstrates talent and/or dedication on the varsity athletics basketball team. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours, as required by the CCAA. Preference will be given to a student enrolled in the Bachelor of Business Administration degree program.	Family and friends of the late Ryan Guillermo.
UNRESTRICTED	Whitman Haines Memorial Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to students who are enrolled in an undergraduate degree program and have graduated from a high school in Fredericton North. Preference will be given to students who are residents of Fredericton North formerly known as Devon. Selection is based on academic achievement and financial need.	Jacqueline Neville (nee Haines) BA 1951, and the New Brunswick University Opportunities Fund.
ENGINEERING	Hamilton-Roberts Scholarship in Geomatics Engineering	Geomatics Engineering.	Approx. $8,000.	1.	1 year.	Open to a Fredericton campus student from the Maritime provinces enrolled in Geomatics Engineering. Selection is made on the basis of scholastic attainment and financial need.	The Hamilton-Roberts Scholarship Fund and members of the Department of Geodesy and Geomatics Engineering.
MULTIPLE	Thomas J. Hammett Memorial Award	Business Administration.	Variable.	2.	1 year.	Awarded each year to one full-time student in the Business Administration degree program at UNBF, and one in Business Administration at UNBSJ. Recipients should have graduated from a high school in the Atlantic Provinces, have a minimum scholarship admission average of 85% or a minimum Assessment GPA of 3.7, have financial need, and proven athletic ability and current athletic interests. One scholarship is awarded at the entrance level and one at the undergraduate level.	The Estate of Mr. Thomas J. Hammett.
UNRESTRICTED	Fred, Elsie, Brian & Robert Hanson Family Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Awarded on the basis of scholastic attainment to students from China enrolled in a degree program at UNB.	The Estate of G. Robert Hanson.

ENGINEERING	J. Lloyd Hargrove Memorial Scholarship	Electrical Engineering.	$500.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Science in Engineering (Electrical). Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Mrs. Beverley E. Hargrove, in memory of her husband, Lloyd (BScEE'46) and the New Brunswick Universities Opportunities Fund.
UNRESTRICTED	Hazlett Basketball Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has demonstrated special athletic ability in the sport of varsity basketball, as a member of the men's UNB Reds basketball team, and academic achievement (minimum 2.0 scholarship GPA for returning students, or minimum 80% average for entering students, as per U SPORTS regulations).	Former Red Raider Mark Hazlett (BPE 1987, MPE 1989) and Red Bloomer Leanne (Brady) Hazlett (BPE 1990).
UNRESTRICTED	Steadman Bucknell Henderson Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to undergraduate students primarily on the basis of scholastic attainment.	The late Kathleen Rachel Henderson in memory of her son, Steadman Bucknell Henderson.
UNRESTRICTED	Tom & Parker Hickey Memorial Scholarship	Unrestricted.	Variable.	Variable.	Variable.	Male student entering the University subject to the following conditions: (1) Born in Restigouche, Gloucester, Northumberland, or Kent Counties; (2) One branch of the candidate's family must have been settled in one of these counties prior to 1873; (3) Some of the forebears of the candidate must have earned part of their living by working in the forests, sawmills, or pulp mills in those counties between the years 1878 and 1900. Male descendants of clergymen and doctors who settled in these counties prior to 1878 are also eligible; (4) Candidate may have obtained his preparatory education elsewhere than in these counties.	The late W. Parker Hickey.
UNRESTRICTED	Harry Hindmarsh Memorial Bursary	Unrestricted.	$6,250.	1.	1 year.	Awarded to a UNB Fredericton campus student on the basis of financial need and satisfactory academic performance.	The Class of 1965 in memory of their late classmate, Harry Hindmarsh.
UNRESTRICTED	Thomas E. Hoben Scholarship	Unrestricted.	Approx. $75.	1.	1 year.	Worthy student requiring financial assistance who is either beginning an undergraduate degree program or has completed the normal requirements for the first year of the program in which the student is registered.	The late Dr. Allan T. Hoben.
MULTIPLE	Alleyne Hubbard Memorial Scholarship	Science, Engineering, Forestry, or Computer Science.	Variable.	1.	1 year.	Awarded to students who have graduated from an NB high school and have enrolled in the following degree programs: Science, Engineering, Forestry or Computer Science. Selection will be based on academic achievement and financial need. Preference will be given to students involved in extracurricular activities and athletics.	Marion Hubbard Logie & Lucy & Frederick Hubbard, in memory of their brother, Alleyne (Al) Russell Hubbard (BScF '37), Lieutenant, killed in action during World War II at Nymegen, Holland on November 20th 1944. He served with Unit No. 15, Canadian Forestry Corps. The New Brunswick

							University Opportunities Fund also contributes to this scholarship.
UNRESTRICTED	Harold Peter Hughes Scholarship	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to a graduate of Sussex Regional High School who is enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need. Preference will be given to a student beginning an undergraduate degree program.	The Estate of Florence Hughes.
UNRESTRICTED	Helen Evelyn Hughes Scholarship	Unrestricted.	Variable.	At least 1.	1 year.	Awarded to a graduate of Fredericton High School and/or Leo Hayes High School who is enrolled in an undergraduate degree program on the Fredericton campus. Selection is based on academic achievement and financial need.	The Estate of Florence Hughes.
UNRESTRICTED	James Edward (Ned) Hughes Scholarship	Unrestricted.	Variable.	At least 1.	1 year.	Awarded to a graduate of Fredericton High School and/or Leo Hayes High School who is enrolled in an undergraduate degree program on the Fredericton campus. Selection is based on academic achievement and financial need.	The Estate of Florence Hughes.
NURSING	Marion (Barclay) Hunt Memorial Nursing Scholarship	Nursing.	$2,000.	2.	4 years.	Awarded to a Saint John campus student and a Fredericton campus student who are beginning the Bachelor of Nursing degree program. Selection will be based on academic achievement and financial need. Consideration may be given to extracurricular activities or volunteer work. Two scholarships will be active at any given time.	Family and friends of Marion (Barclay) Hunt.
NURSING	Muriel E. Hunter Scholarship	Nursing.	Variable ($700).	1.	Up to 4 years.	Awarded to a student enrolled in the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program. Preference will be given to full-time students. Students will have demonstrated interest and competent practice in community health nursing within the program or in employment. Capacity to be innovative in practice is a criterion as well as good scholastic standing and financial need. There should be an intention to work in the community in New Brunswick after graduation.	Family and friends of the late Muriel E. Hunter, a distinguished public health nurse.
NURSING	Catherine Leslie Ircha Bursary in Nursing	Nursing.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Nursing degree program.	Dr. Michael C. Ircha, in memory of his mother.
UNRESTRICTED	Edwin Jacob Special University Scholarship	Unrestricted.	Variable.	Multiple.	Up to 4 years.	Awarded to students based on academic achievement. Consideration may be given to financial need and/or extracurricular activities. Students transferring from other institutions may be considered.	The University.
MULTIPLE	Ernest P. Jarvis Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a graduate of Stanley High School who is enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance. Preference is given to a student enrolled in the Bachelor of Business Administration degree program.	Murray Jarvis, BBA 1976.
MULTIPLE	Jenkins Family Scholarship	Nursing, Science, or Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student in the Bachelor of Nursing, Bachelor of Science, or the Bachelor of Education degree program who is from Queens, Kings, or Sunbury Counties, with preference given to a student from Queens County. Selection is based on scholastic achievement.	The Jenkins' family and friends in honour of Dr. Willard Jenkins and Donald and Patricia Jenkins.

BUSINESS ADMINISTRATION	Welsford R. Jenkins Bursary for Business Administration	Business Administration.	Min. $1,250.	1.	1 year.	Awarded on the basis of academic performance and financial need to a student in the Business Administration degree program on the Saint John campus.	Mr. Welsford R. Jenkins.
UNRESTRICTED	Drs. Beverly and Marie Jewett Family Scholarship	Unrestricted.	$10,000.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program on the Fredericton campus. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	The family of Dr. Beverly Jewett (BSc 1940), long-time member of the Board of Governors and doctor to the varsity teams, and Dr. Marie Jewett, both great friends and supporters of UNB.
UNRESTRICTED	Brian and Denise Johnson Scholarship	Unrestricted.	Tuition.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program on the Fredericton campus who is, or will be, a member of the University's varsity men's hockey team. Recipients must have demonstrated successful academic performance (minimum 80% admission average for an entering student or 2.0 scholarship grade point average for a returning student, as per U SPORTS regulations). Preference will be given to a student with financial need. This award is open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	Denise and Brian Johnson (BBA 1978).
ARTS	Colby H. & Bessie J. Jones Scholarship in Arts	Arts.	Min. $500.	Min. 1.	1 year.	Open to students in the Bachelor of Arts degree program at UNB who are graduates of a high school in Kings or Queens Counties, New Brunswick.	The Late Mrs. Bessie J. Jones.
FORESTRY	Colby H. & Bessie J. Jones Scholarship in Forestry	Forestry.	Min. $500.	Min. 1.	1 year.	Open to students in the Faculty of Forestry and Environmental Management at UNB who are graduates of a high school in Kings or Queens Counties, New Brunswick.	The Late Mrs. Bessie J. Jones.
MULTIPLE	Jones Winsor Scholarship	Science or Engineering.	$5,000.	1.	4 years.	Awarded to a student from New Brunswick enrolled in the Bachelor of Science or Bachelor of Science in Engineering degree program. Selection will be based on academic achievement and financial need. The recipient must be from Kings County, NB. One scholarship will be active in any given year.	Margaret (Winsor) & Bill Jones (BSE CE 1965, DSc 2017).
BUSINESS ADMINISTRATION	Karnes Scholarship in Business Administration	Business Administration.	Variable (1 or more recipients).	1 or more.	1 year.	Open to graduates of a New Brunswick high school. Selections are made on the basis of scholastic attainment and financial need.	Karnes Kitchen Ltd. and the New Brunswick University Opportunities Fund.
KINESIOLOGY	John Kelly Recreation Bursary	Kinesiology.	Min $1,000.	2.	1 year.	Awarded on the basis of financial need to Fredericton campus students enrolled in an undergraduate degree program in the Faculty of Kinesiology who have demonstrated successful academic performance. One bursary will be awarded to a student beginning the program directly from high school and one bursary will be awarded to a student who has completed at least the minimum requirements for the first year. Consideration will also be given to extracurricular activities, community involvement and/or leadership qualities.	The Greater Saint John Community Foundation.

UNRESTRICTED	Peter C. Kelly Hockey Scholarships	Unrestricted.	$2,500.	2.	1 year.	Awarded to Fredericton undergraduate or graduate students who have demonstrated talent in the field of UNB Reds hockey. The recipients must have achieved a 2.0 grade point average for continuing students or an 80% scholarship average for high school students, as per U SPORTS regulations. One scholarship will be awarded to a member of the UNB Reds women's hockey team and one will be awarded to a member of the UNB Reds men's hockey team. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	The estate of Peter C. Kelly.
UNRESTRICTED	Khaki University & Y.M.C.A. Scholarship	Unrestricted.	$550.	2.	1 year.	One scholarship to a member of the Freshman class and a scholarship to a member of the Sophomore class under the following conditions and in order named: (1) Sons and daughters of those who served in the Armed Forces during the war of 1914-18. (2) Sons and daughters of those who served in the Armed Forces during the War of 1939-45. (3) Those who served in the Armed Forces during the War of 1939-45. Scholarships are awarded on consideration of financial need and academic success.	A bequest.
UNRESTRICTED	Dirk Kiy Leadership Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who is enrolled at UNB Fredericton and has demonstrated a high skill level in the sport of men's varsity volleyball as well as exceptional leadership qualities. The recipient must have a minimum 80% entering average or a 2.0 assessment grade point average, as per U SPORTS regulations. This award is open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	Friends of Dirk Kiy, member of the men's UNB volleyball team from 1975-78, team captain from 1977-78 and an AUS All star in 1977-78.
ENGINEERING	Denise LaFroge Scholarship	Engineering.	$5,000.	1.	1 year.	Awarded to a woman student enrolled in the Bachelor of Science in Engineering (any discipline). Selection will be based on academic achievement. The recipient must be from New Brunswick.	Denise LaFroge (BSE ME 1988).
UNRESTRICTED	Aldéa and Fernand Landry Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student in an undergraduate degree program who has graduated from a high school in Gloucester, Northumberland or Restigouche Counties, with preference given to a graduate from a high school in the Acadian Peninsula. Selection is based on academic achievement and financial need.	Dr. Aldéa Landry (LLB 1971, LLD 2002), P.C., C.M., Q.C. and the New Brunswick University Opportunities Fund.
COMPUTER SCIENCE	Lawlor Family Scholarship	Computer Science.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in an undergraduate degree program in the Faculty of Computer Science and is a member of a UNB Reds team. The recipient must have demonstrated talent in the field of varsity athletics and have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours. Preference will be given to a member of the Varsity Reds Basketball teams.	Pat and Ed Lawlor (MCS 1972) and Catherine (Lawlor) Reid (MCS 1998) and Steven Lawlor (BA1999), a former Varsity Reds basketball player.
UNRESTRICTED	Kevin & Dena LeBlanc Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student who is a graduate of the Riverview High School and is enrolled in an undergraduate degree program on the Fredericton campus. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Kevin (BSC CS 1985, BBA 1986) and Dena LeBlanc and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Amby Legere Award in Swimming	Unrestricted.	Variable.	1.	1 year.	Awarded to a male student who is a member of the UNB Swim Team on the Fredericton campus. Selection is based on hard work, dedication to the sport of swimming and strong involvement in the community. The recipient must have a 2.0 grade point average (or 80% for an entering student, as per U SPORTS regulations). This award is also available to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	The Peppin Family.
MULTIPLE	E. Jane Leonard Scholarship	Business Administration or Science.	$1,200.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Business Administration or Bachelor of Science degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	E. Jane Leonard, BBA 1981, MSc (Surrey, UK) and the New Brunswick University Opportunities Fund.
NURSING	M. J. Lloyd Memorial Scholarship	Nursing.	Variable.	Variable.	1 year.	Awarded on the basis of academic performance and financial need to students in either the Basic or Post RN Nursing program.	Mrs. Erie Yvonne Bamford.
NURSING	Lockhart Foundation Scholarship in Nursing	Nursing.	$4,750.	1.	1 year.	Awarded to a student who is entering the second year of the Advanced Standing Nursing Program. Selection will be based on academic achievement and financial need. Preference will be given to students with dependents.	Lockhart Foundation.
NURSING	Cheryl A. and John S. Lockhart Memorial Bursary	Nursing.	$1,000.	3.	1 year.	Awarded on the basis of financial need to a student enrolled in the Bachelor of Nursing Advanced Standing degree program at the Moncton site or Bachelor of Nursing degree program on the Saint John campus. The recipient must demonstrate successful academic performance and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Friends and Family of the late Cheryl (Stevens) and John Lockhart (BScCE 1972) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Irene Loggie Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to an Aboriginal student enrolled in an undergraduate degree program. The recipient must be from the Natoageneg First Nation (Eel Ground), the Metepenagiag Mi'kmaq First Nation (Red Bank), the Esgenoopetitj First Nation (Burnt Church), the Elsipogtog First Nation (Big Cove), or the Ge'goapsgog First Nation (Eel River Bar). Selection will be based on academic achievement. Preference will be given to a student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program.	Irene Loggie.
ENGINEERING	Richard B. Logie Memorial Scholarship	Engineering.	$4,000.	3.	1 year.	Open to students who have graduated from a New Brunswick high school and are enrolled in the Bachelor of Science in Engineering (any discipline). Preference will be given to entering students. Selection is made on the basis of scholastic attainment and financial need.	William & Marion Logie and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Lutze-Wallace Family Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded based on financial need to a student enrolled in an undergraduate degree program. The recipient must be from Jamaica and demonstrate successful academic performance. Preference will be given to graduates of Cornwall College.	Dr. Cyril Lutze-Wallace, Jr. (BSC 1982, PHD 1988) and Cheryl Lutze-Wallace (BSC 1982, MSC 1985).

UNRESTRICTED	Patricia & Charles MacDonald Scholarship	Unrestricted.	Tuition.	3.	1 year.	Awarded to a student enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need. Consideration may be given to extra-curricular activities. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Charles MacDonald and the New Brunswick University Opportunities Fund.
MANAGEMENT	Ronald & Joan MacFarlane Bursary	Business Administration.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Business Administration degree program. The recipient must be a graduate of a New Brunswick high school and must demonstrate successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Sharon MacFarlane, BBA 1979 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	William (Bill) MacGillivary Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the sport of UNB Reds men's hockey. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Friends and family of William (Bill) MacGillivary, BPE 1962.
SCIENCE, APPLIED SCIENCE & ENGINEERING	William McIntosh Memorial Scholarship	Science, Applied Science & Engineering.	$1,500.	1.	1 year.	Awarded on the basis of financial need to students whose record shows they may benefit from a university education. Open to any New Brunswick student. Preference will be given to a student majoring in Mathematics or one of the Natural Sciences.	Dr. G. Forbes Elliot, Former Vice-President, UNBSJ and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. Colin B. Mackay Achievement Award	Unrestricted.	$5,000.	1.	1 year.	Awarded to a student who is enrolled an undergraduate degree program on the Saint John campus and has demonstrated successful academic achievement. Selection is based on the demonstration of overcoming significant barriers in the pursuit of a post-secondary education. Consideration may also be given to leadership qualities, financial need and/or community involvement.	The estate of Dr. Colin B. Mackay, BA '42, LLD '55, President of UNB, 1953-1969, President Emeritus 1978-2003.
UNRESTRICTED	Dr. Colin B. Mackay Scholarship	Unrestricted.	Variable.	Multiple.	Up to 4 years.	Awarded to Canadian and/or international students who are enrolled in an undergraduate degree program on the Saint John campus. Selection is based on scholastic attainment. Transfer students may be considered for this scholarship.	The estate of Dr. Colin B. Mackay, BA' 42, LLD '55, President of UNB, 1953-1969, President Emeritus 1978-2003.
UNRESTRICTED	Gail MacKinnon Memorial Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a female student on the Fredericton campus who has demonstrated high academic achievement (3.0 assessment year GPA for returning students, and 80% average for entering students), special athletic ability in the sport of women's varsity volleyball as well as leadership abilities in the surrounding community. This award is open to transfer students.	UNB Volleyball Alumni.
COMPUTER SCIENCE	MacLauchlan McKenzie Scholarship in Computer Science	Computer Science.	$4,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Computer Science degree program. Selection is made on the basis of scholastic attainment and financial need.	Julia MacLauchlan and Warren McKenzie.

UNRESTRICTED	Ruth H. MacMillan Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to students who are graduates of Central New Brunswick Academy, and who are beginning an undergraduate degree program at UNB, or have completed at least the normal requirements for the first year of the program in which they are registered at the University.	Mr. A. Clair MacMillan and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Maecenas Undergraduate Scholarship	Unrestricted.	Variable.	2.	1 year.	Awarded to students enrolled in an undergraduate degree program. One scholarship to be awarded to a Fredericton campus student and one scholarship to be awarded to a Saint John campus student. Selection will be based on academic achievement and financial need.	
ENGINEERING	Charles F. Mallory Scholarship	Civil Engineering.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Science in Engineering degree program. The recipient must be a New Brunswick Resident. Selection will be based on academic achievement and financial need. Preference will be given to a student studying civil engineering.	Friends and family of Charles (Charlie) Franklin Mallory (BSE CE 1948).
MULTIPLE	Murdock M. & Bessie Mann Memorial Scholarship	Engineering or Science.	Variable.	2 or more.	1 year.	Open to Fredericton campus students who are enrolled in the Bachelor of Science in Engineering or the Bachelor of Science degree program. One scholarship will be provided to a student beginning the program directly from high school. The second scholarship will be provided to a student who has completed at least the minimum requirements for the first year of the program. Preference will be given to students from Restigouche and Gloucester counties. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	Bernice Mann in honor of her parents, and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Laura B. McCain Memorial Scholarship	Unrestricted.	Variable.	2.	1 year.	Awarded to students from Carleton County. Selections are made on the basis of scholastic attainment and financial need.	The late Laura B. McCain.
ENGINEERING	Harry M. McCrea Memorial Scholarship	Engineering.	$3,750.	1.	1 year.	Awarded to a student who is a graduate of J.M.A Armstrong High School and is enrolled in an undergraduate degree program in the Faculty of Engineering. Selection is based on academic performance and financial need. Preference will be given to the student who demonstrates leadership ability.	Amour M. "Ben" McCrea, P.Eng, Class of 1957, DSc 2012 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Donald McCrossan (NB) Scholarship	Unrestricted.	$1,500.	2.	1 year.	Awarded to a Fredericton campus student who is enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need with consideration given to participation in extracurricular activities. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Donald G. McCrossan and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Donald G. McCrossan Scholarship	Unrestricted.	$1,000.	1.	1 year.	Open to Fredericton campus students who are Canadian citizens (or landed immigrants). Awarded on the basis of scholastic attainment and financial need with consideration given to participation in extracurricular activities.	Donald G. McCrossan.
SCIENCE	Shannon McCue Scholarship	Science.	$1,500.	1.	1 year.	Awarded to a student in the Bachelor of Science degree program who is a New Brunswick resident, according to the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Dr. Shannon McCue BSc '97 and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Martha Fraser McIntosh Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded primarily on the basis of scholastic attainment.	The late Martha Fraser McIntosh.
UNRESTRICTED	Clarence McIntyre Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a Black student who is a graduate of a Saint John area high school, has demonstrated successful academic performance, and is registered in an undergraduate degree program.	Family and friends of the late Clarence McIntyre.
COMPUTER SCIENCE	Frank McKenna Computer Science Scholarship	Computer Science.	$15,000 (one); $5,000 (multiple).	Variable	1 year.	Awarded to students who are enrolled in the Bachelor of Computer Science, Bachelor of Science in Software Engineering and/or Bachelor of Science in Computer Science. Selection will be based on academic achievement. The recipients must have graduated from James M. Hill, Miramichi Valley, and/or North and South Esk High School. Preference will be given to entrance students.	Frank McKenna (LLB 1974, LLD 1988) and Julie McKenna (BEd 1974, MEd 1995) through the McKenna Institute.
UNRESTRICTED	McIntyre-McMonagle Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students on the basis of scholastic attainment and financial need. Consideration may be given to students' participation in extracurricular activities.	The family of Annie (McIntyre) and Walter McMonagle-James Roach McMonagle, Maude (McMonagle) Jowsey, A. Elizabeth McMonagle, S.Muriel McMonagle, in memory of our brothers Hugh McIntrye McMonagle & Walter Neil McMonagle.
ENGINEERING	A.W. McLaughlin Scholarship in Geomatics Engineering	Geomatics Engineering.	$5,000.	1.	1 year.	Open to a Fredericton campus student enrolled in the Geomatics Engineering program, who is a graduate of a New Brunswick high school. Selection is made on the basis of scholastic attainment, professional promise and financial need.	Family, friends and professional colleagues of the of the late A.W. McLaughlin and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Alan B. McLean and Joyce E. McLean Scholarship	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to Saint John campus students enrolled in an undergraduate degree program. Recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selections are made on the basis of scholastic attainment and financial need.	The estate of Alan B. McLean and the New Brunswick Universities Opportunities Fund.
UNRESTRICTED	Robert F. & Irene McMulkin Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a student from Queens County. Selection is made on the basis of scholastic attainment and financial need.	Mr. and Mrs. Robert F. McMulkin and the New Brunswick University Opportunities Fund.
NURSING	Baukje (Bo) Miedema Scholarship	Nursing.	$1,000.	1.	1 year.	Awarded to an Indigenous student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program. Selection will be	Baukje Miedema (BA 1987, MA 1990, PhD 1996) and her family,

						based on academic achievement. Preference will be given to a student from New Brunswick.	friends, and colleagues.
UNRESTRICTED	Norman Brougham Miller Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Open to students who are graduates of a New Brunswick high school. Selections are made on the basis of scholastic attainment.	The late Norman Brougham Miller BA, BEd '60.
UNRESTRICTED	John Molson Athletic Scholarship	Unrestricted.	$2,500.	3.	1 year.	Awarded to Fredericton campus students enrolled in an undergraduate or graduate degree program who play for a UNB Reds team. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Molson Coors Canada.
UNRESTRICTED	Juan Montalvo Memorial Bursary	Unrestricted.	$700.	Min. 1.	1 year (may be renewed).	Awarded to undergraduate students at the University of New Brunswick from Latin America or Mexico. Preference will be given to new immigrants of Canada, or their children, who have Landed Immigrant status, and are in need of financial assistance.	Family and friends of the late Juan Montalvo, a man who cared deeply about the welfare of newly arrived immigrants to Canada from Latin America.
MULTIPLE	T. Ross Moore Memorial Bursary	Science or Engineering.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to Fredericton campus students who are enrolled in an undergraduate degree program in the Faculty of Science or the Faculty of Engineering. The recipient must demonstrate successful academic achievement and be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The estate of Mary Olive Moore, in memory of her husband, T. Ross Moore (BSC 1933).
MULTIPLE	T. Ross Moore Memorial Scholarship	Science or Engineering.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students who are enrolled in an undergraduate degree program in the Faculty of Science or the Faculty of Engineering. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The estate of Mary Olive Moore, in memory of her husband, T. Ross Moore (BSC 1933).
ENGINEERING	MRDC Athletic Award	Engineering.	$1,400.	1 or more.	1 year.	Awarded to Fredericton campus students who are enrolled in the Bachelor of Science in Engineering and have demonstrated talent in the field of varsity athletics. Recipients must have at least an 80% entering average or a 2.0 grade point average, as per U SPORTS regulations, in the previous year of study. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	MRDC Operations Corporation.
UNRESTRICTED	Anne Murray Alumni Scholarship	Unrestricted.	Variable.	1.	1 year.	Selections are made on the basis of scholastic attainment and financial need.	Associated Alumni.
UNRESTRICTED	Don Nelson Leadership Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a Fredericton campus student who has demonstrated high academic achievement (3.0 assessment year GPA for returning students, and 80% average for entering students), special athletic ability in the sport of men's varsity basketball, as well as leadership abilities in his surrounding community. This award is open to transfer students.	Men's Basketball Alumni.

UNRESTRICTED	New Brunswick Students Scholarships	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students who are residents of New Brunswick, according to the Student Financial Services guidelines. Selection will be based on scholastic achievement and financial need.	Funds raised through UNB's Annual Giving Program and the New Brunswick University Opportunities Fund.
UNRESTRICTED	New Brunswick Students Scholarships UNBF	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students who are residents of New Brunswick, according to the Student Financial Services guidelines. Selection will be based on scholastic achievement and financial need.	Funds raised through UNB's Annual Giving Program and the New Brunswick University Opportunities Fund.
UNRESTRICTED	New Brunswick Students Scholarships UNBSJ	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Saint John campus students who are residents of New Brunswick, according to the Student Financial Services guidelines. Selection will be based on scholastic achievement and financial need.	Funds raised through UNB's Annual Giving Program and the New Brunswick University Opportunities Fund.
ENGINEERING	Simon Newby Geomatics Scholarship	Geodesy and Geomatics Engineering.	$1,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program who is pursuing a diploma in Technology Management and Entrepreneurship. Selection is based primarily upon the demonstration of leadership/entrepreneurial qualities, and/or special needs, and/or financial need. In all instances, excellent academic performance is a requirement.	Simon Newby.
MULTIPLE	NOVA Scholarships for Women and/or Aboriginal Students in Business	Business Administration.	Variable.	Variable.	1 year.	Awarded with consideration of scholastic attainment, to female students, as well as to male or female aboriginal students in the Business Administration degree program.	NOVA Corporation Charitable Foundation.
UNRESTRICTED	Old North End Bursary	Unrestricted.	$1,500.	1 or more.	1 year.	Awarded on the basis of financial need to part-time or full-time Saint John campus students who reside in the north end of Saint John. Recipients must be graduates of Harbour View High School, Saint Malachy's High School or Saint John High School and must demonstrate successful academic performance. Preference will be given to students who demonstrate community service and good citizenship.	Citizens of Saint John and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dawn O'Neill Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is a single mother enrolled in an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines and demonstrate successful academic performance.	Dawn O'Neill, BSc 1979 and the New Brunswick University Opportunities Fund.
MULTIPLE	Dr. W. Blair Orser Scholarship in Science	Science.	Variable.	Variable.	1 year (may be renewed).	Awarded to students enrolled in the Bachelor of Science degree program who are graduates of Hartland High School or Carleton North High School. Selection is based on academic achievement. Preference will be given to students entering first year Science who intend to follow a pre-medical program of studies.	Dr. W. Blair Orser.
FORESTRY	Mr. & Mrs. Conrad J. Osman Scholarship	Unrestricted.	Variable.	Multiple.	1-5 years.	Scholarships will be awarded at the discretion of the governing body of the University, but worthy students residing in the County of Albert, in the Province of New Brunswick, applying for entrance to the University, and particularly those who propose to pursue an agricultural or	The late Mrs. Gladys Marie Osman.

						forestry course, shall be shown preference when the scholarships are awarded.	
UNRESTRICTED	Dave Patterson Memorial Award	Unrestricted.	$1,250.	1.	1 year.	Awarded to a female student on the Saint John campus who has demonstrated a genuine talent in the sport of volleyball. Female students who are active members of the Seawolves Women's Volleyball team or who played volleyball at the high school level may be considered. The recipient must achieve a minimum scholarship GPA of 2.0 as a returning student, or a minimum 65% scholarship average as an entering student. Consideration will be given to the student's involvement in community and school activities.	Friends, family and colleagues of Dave Patterson.
SCIENCE	Allister R. Peach Memorial Scholarship	Unrestricted but preference to Geology.	$1,500.	1.	1 year.	Awarded to a student on the Fredericton campus from Cape Breton, Nova Scotia, with preference to a student in the Department of Earth Sciences. Selection is made on the basis of academic standing and strength of character.	Family and friends of the late Allister R. Peach.
UNRESTRICTED	Audrey Peppin Women's Hockey Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the sport of women's varsity hockey. The recipient must have achieved successful academic performance (minimum 80% admission average for an entering student or minimum 2.0 assessment year grade point average for a continuing student, as per U SPORTS regulations). This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Audrey Peppin (BPE 1972, BED 1981).
UNRESTRICTED	Emma Porter Perkins Scholarship	Unrestricted.	Approx. $1,000.	1.	1 year.	Awarded on the basis of academic performance to a Protestant student, preferably from Carleton County.	The late Perry B. Perkins.
FORESTRY	William and Iris Perrin Scholarship	Forestry.	$500.	1.	1 year.	Awarded to a student who is enrolled in an undergraduate degree program in the Faculty of Forestry. Selection is based on academic achievement and financial need.	Family of Bill (BScF 1953) and Iris Perrin.
UNRESTRICTED	Frances M. Peters Scholarship	Unrestricted.	Min. $250.	1.	1 year.	Woman student attending the University who is in need of financial assistance.	The late Frances M. Peters.
UNRESTRICTED	Phillips Leadership Academy Scholarship	Unrestricted.	$500.	2.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program. Selection will be based on academic achievement. The recipient must be enrolled in the Phillips Leadership Academy and demonstrate exceptional leadership skills.	Sonny and Colleen Phillips.
MULTIPLE	Plato Testing Scholarship	Computer Science or Engineering.	$4,500.	1.	1 year (may be renewed).	Awarded to an Indigenous student on the Fredericton campus who has completed at least the first year of the Bachelor of Science in Engineering or Bachelor of Computer Science degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to a student enrolled in the Bachelor of Computer Science.	Plato Testing and the New Brunswick University Opportunities Fund.
MULTIPLE	H.G. & M.L. Pond Scholarship	Forestry, Forest Engineering, or Nursing.	Variable.	Variable.	1 year.	Open to students in the program leading to the degree of Bachelor of Science in Forestry/Forest Engineering or Nursing. Selections are made on the basis of scholastic attainment and financial need. Consideration will be given to participation in extracurricular activities. All qualified applicants will be considered including those from the three Prairie provinces.	Mr. & Mrs. H.G. Pond.

MULTIPLE	David and Susan Potten Scholarship	Science, Technology, Engineering and Math.	$250.	1.	1 year.	Awarded to a Fredericton campus student enrolled in an undergraduate degree program in STEM (Science, Technology, Engineering, Math) who is a member of a Reds athletic team. Selection will be based on academic achievemet and involvement in extracurricular activities. The recipient must demonstrate they are a gifted athlete who gives back to the community.	David Potten (BScChE 1974) and Susan Watson (BPE 1974).
UNRESTRICTED	James E. Porter Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Awarded to graduates of Southern Victoria High School and Tobique Valley High School. Selections are made on the basis of scholastic attainment and financial need. Preference will be given to students enrolled in an undergraduate degree program. Graduate students as well as students enrolled in a no-degree program may be considered. Transfer students are eligible to be considered. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	The late Mr. James E. Porter and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Project Hero Award	Unrestricted.	Tuition for 8 terms; residence for 2 terms.	1 or more.	Up to 4 years.	Awarded to dependents of Canadian Forces personnel killed while serving in an active military mission as determined by Canadian Forces criteria. To be eligible, the recipient must be a citizen or permanent resident of Canada; a dependent of a Canadian Forces personnel killed while serving in an active mission; under the age of twenty-six; registered as a full-time undergraduate student and in good academic standing at UNB. In the event that another agency or organization is paying the tuition or residence fees on behalf of an eligible student, the UNB Project Hero Award will not also be awarded.	The University.
UNRESTRICTED	Purdy MacDonald Scholarships & Bursaries	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students who are graduates of a rural New Brunswick high school located outside any of New Brunswick's incorporated cities. Selections are made on the basis of financial need and satisfactory academic performance.	The late Mrs. Nellie Purdy.
UNRESTRICTED	Nick Quinn Memorial Award in Men's Soccer	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has demonstrated academic achievement (minimum 2.0 scholarship GPA for returning students, or 80% average for entering students, as per U SPORTS regulations) and special athletic ability and skill in the sport of men's varsity soccer. The successful candidate will also demonstrate the qualities of leadership and fair play, two qualities that Nick was noted for. This award is also open to transfer and graduate students, as well as students who are enrolled in a minimum of 9 credit hours. Preference will be given to a student-athlete from New Brunswick.	Family and Friends of Nick Quinn.
UNRESTRICTED	Carol M. (Harris) Raynes Memorial Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a Saint John campus student enrolled in an undergraduate or graduate program who has demonstrated talent and/or dedication in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or a 65% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours, as required by the CCAA.	The estate of Carol M. (Harris) Raynes.
UNRESTRICTED	Red Carpet Food Services Bursary	Unrestricted.	Approx. $550.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has demonstrated successful academic performance.	Red Carpet Food Services.
UNRESTRICTED	Reds Athletic Excellence Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who are members of the UNB Reds women's basketball, hockey, soccer, swimming and volleyball teams. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as	

						well as students who are enrolled in a minimum of 9 credit hours.	
UNRESTRICTED	Reds Hockey Excellence Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who are members of the UNB Reds men's hockey team. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	
MULTIPLE	Patricia and Murray Reid Memorial Scholarship	Business, Education, Engineering, or Nursing.	Min. $1,500.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in an undergraduate degree program in Business, Education, Engineering or Nursing. The recipient must be a New Brunswick resident and demonstrate community involvement. Selection is based on academic achievement.	Reid Family Trust Fund: Cheryl Wetmore (BA 1966), Pamela Reid (BN 1971), Robert Reid (BBA 1975) and Heather Hawkes (BBA 1981).
RENAISSANCE COLLEGE	Renaissance College Scholarship	Philosophy in Interdisciplinary Leadership.	Variable.	Variable.	1 year.	Awarded to entering or continuing students who are enrolled in the Bachelor of Philosophy (in Interdisciplinary Leadership Studies) degree program offered by UNB's Renaissance College. Selections are made on the basis of scholastic attainment, educational and career goals, volunteer activities, prior learning experience, diversity of background and skills (such as but not limited to artistic, musical, athletic, cultural, linguistic), and leadership experiences. Students transferring from other institutions may be considered.	Renaissance College.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Rolf Riegger Bursary	Computer Science or Engineering.	$2,000.	3.	1 year.	Awarded on the basis of financial need to Saint John campus students who are Canadian citizens entering first or second year of a Bachelor of Science in Computer Science or Bachelor of Science in Engineering degree program. Recipients must demonstrate successful academic performance.	Sachiko Riegger.
UNRESTRICTED	Robert (Bob) Spurway Memorial Scholarship - Class of '53	Unrestricted.	Variable.	1.	1 year.	Selections are made on the basis of scholastic attainment and financial need.	The Class of 1953.
MULTIPLE	James C. Sansom, MM Memorial Scholarship	Business Administration or Forestry.	$1,000.	1.	1 year.	Awarded to a student in the Bachelor of Business Administration or Bachelor of Science in Forestry degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. The scholarship will be awarded every second year and the recipient will alternate between Business Administration and Forestry (when possible).	Brock Sansom, BBA'76, Brent Sansom, BBA'75, and the New Brunswick University Opportunities Fund.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Horst Sauerteig Bursary	Science, Applied Science, or Engineering.	$500.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student enrolled in an undergraduate degree program in the Faculty of Science, Applied Science and Engineering. The recipient must demonstrate successful academic performance.	The Sauerteig family.
MULTIPLE	Schulich Bursary	Science, Technology, Engineering, or Mathematics.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to students enrolled in an undergraduate degree program in the areas of Science, Technology, Engineering or Mathematics. Recipients must demonstrate successful academic performance.	Seymour Schulich.
NURSING	Francis Hugh Scovil Scholarship in Nursing	Nursing.	Variable.	Variable.	1 year (may be renewed).	Awarded primarily on the basis of academic performance to students in either the Basic or Post-RN Nursing program.	The late Francis Hugh Scovil.

UNRESTRICTED	Seawolves Residence Award	Unrestricted.	Residence.	4.	1 year.	Awarded to Saint John campus undergraduate students who have demonstrated talent in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or a 65% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours as required by the CCAA. Recipients must stay in residence to retain this scholarship.	University of New Brunswick.
MULTIPLE	Shaw Group Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering degree program (any discipline). Selection will be based on academic achievement and financial need.	The Shaw Group.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Cherrill Edwina Shea and Carl Robert Aron Scholarship	Nursing or Health Sciences.	$7,500.	1.	1 year.	Awarded to a Saint John campus student who is a graduate of a New Brunswick high school, a New Brunswick resident, and enrolled in the Bachelor of Nursing or the Bachelor of Health Sciences. Selection is based on academic achievement and financial need. The recipients may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Cherrill Edwina Shea, Carl Robert Aron and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Wilma & Herb Shephard Bursary	Unrestricted.	Variable.	Variable.	Up to 5 years.	Awarded on the basis of financial need to Fredericton campus students who are enrolled in an undergraduate degree program and demonstrate satisfactory academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Wilma & Herb Shephard and the New Brunswick University Opportunities Fund.
BUSINESS ADMINISTRATION	Simms Scholarship	Business Administration.	Variable.	Variable.	1 year.	Open to graduates of a New Brunswick high school. Selections are made on the basis of scholastic attainment and financial need.	T.S. Simms & Company Ltd.
UNRESTRICTED	Joyce Slipp Basketball Award	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the field of women's varsity basketball. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Alumni and friends of Joyce Slipp (1972, 1974) who coached the UNB women's basketball team from 1976-1980 and 1995-2006.
UNRESTRICTED	Hazen M. & Margaret A. Smith Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Open to students who have graduated from a Charlotte County high school. Selections are made primarily on the basis of academic performance and financial need.	Margaret A. Smith and the New Brunswick University Opportunities Fund. Hazen 1899-1983 and Margaret 1904-2002 (Sinclair) Smith were natives of Pomeroy Ridge and Scotch Ridge. They moved to Somerville, MA after they were married in 1924.
UNRESTRICTED	Joan and Lyman Smith Scholarship	Unrestricted.	$1,000.	2.	1 year.	Awarded to Fredericton undergraduate or graduate students who have demonstrated talent in the field of Reds hockey and leadership abilities in the community. The recipients must have achieved a 2.0 grade point average for continuing students or an 80% scholarship average for high school students, as per U SPORTS regulations. One scholarship will be awarded to a member of the UNB Reds women's hockey team and one	Scott Smith (BEd 1988)

SECTION C: SCHOLARSHIPS, PRIZES AND AWARDS

						will be awarded to a member of the UNB Reds men's hockey team. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	
UNRESTRICTED	Dr. Richard (Dick) Snow Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the sport of UNB Reds men's hockey. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Friends and family of Richard (Dick) Snow, BA 1954.
BUSINESS ADMINISTRATION	Dr. Malcolm M. Somerville Bursaries in Business	Business.	Min. $500.	2.	1 year.	Awarded on the basis of financial need to students, one male, one female, from New Brunswick in the Faculty of Business on the Saint John campus who have demonstrated successful academic performance.	The family of Malcolm M. Somerville, D.Litt. '96 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	James Somerville Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students based on academic achievement. Consideration may be given to financial need and/or extracurricular activities. Students transferring from other institutions may be considered. This scholarship was named in honour of President Somerville who presided over the College of New Brunswick, 1800-1829.	The University.
ARTS	Steeves Albert County Scholarship	Arts.	$8,000.	1.	4 years.	Male student from the County of Albert taking the BA course at the University, who received high academic standing. One scholarship awarded every 4 years.	The late Dr. Charles Peck Steeves.
MULTIPLE	Jean R. Stewart Memorial Scholarship	Physical Sciences or Engineering.	Variable.	Variable.	1 year.	Awarded to female students studying one of the physical sciences or engineering at the University of New Brunswick. The student should have graduated in the top quarter of the high school graduation class and have a demonstrated need for financial assistance.	The late Jean R. Stewart.
UNRESTRICTED	Student Awards Campaign Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students enrolled in an undergraduate degree program. Selection is based on scholastic achievement and financial need.	Contributors to the Student Awards Campaign.
UNRESTRICTED	Student Awards Campaign UNBF Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students enrolled in an undergraduate degree program. Selection is based on scholastic achievement and financial need.	Contributors to the Student Awards Campaign.
UNRESTRICTED	Student Awards Campaign UNBSJ Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Saint John campus students enrolled in an undergraduate degree program. Selection is based on scholastic achievement and financial need.	Contributors to the Student Awards Campaign.
MULTIPLE	Stutt-Syroid Scholarship	Arts or Business Admisinstration.	$1,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Arts or Bachelor of Business Administration degree program. Selection will be based on academic achievement and financial need.	Jessica Stutt (BA 2008, MBA 2017) and Peter Syroid (BSE ME 1998, MBA 2003).
UNRESTRICTED	Catherine & Gerald Sutherland Bursary	Unrestricted.	$3,500.	1.	1 year.	Awarded on the basis of financial need to a student on the Fredericton campus who is a graduate of a high school in central New Brunswick, and has demonstrated successful academic performance.	Catherine & Gerald Sutherland and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Catherine Sutherland Scholarship in Women's Hockey	Unrestricted.	$1,500.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the field of women's hockey varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Catherine Sutherland (BA 1978, BBA 1994).
UNRESTRICTED	Harold Tam Wing-ming Scholarship	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to students enrolled in an undergraduate degree program. Selection is based on academic achievement.	Michael Wu, in honour of Harold Tam Wing-ming, BSc (Eng) 1960, UNB's first Chinese student from Hong Kong.
NURSING	Nadine Taylor Scholarship	Nursing.	$3,000.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Nursing Advanced Standing degree program at the Moncton site. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident. Preference will be given to a student from the Moncton area.	The Fred and Nadine Taylor Charitable Foundation.
UNRESTRICTED	Colonel Henry Thomas Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student on the Saint John campus.	The late Fred S. Thomas, Class of 1906.
ENGINEERING	Elizabeth Ting Memorial Scholarship	Electrical and Computer Engineering.	$3,000.	1.	1 year.	Awarded to a student who has completed the normal requirements for the first two years of the Bachelor of Science in Engineering (Electrical) degree program. Selection is based on academic excellence. Preference will be given to a woman student.	The family and friends of Elizabeth Ting (MSE EE 1967).
FORESTRY	Tolko Scholarship	Forestry and Environmental Management.	$1,000.	2.	1 year.	Awarded to students, one male and one female, who are enrolled in an undergraduate degree program in the Faculty of Forestry and Environmental Management. Selection is based on academic achievement and financial need.	Tolko Industries Ltd.
MULTIPLE	Daryl and Maureen Tingley Scholarship	Mathematics.	Up to $10,000.	1 or more.	1 year (may be renewed).	Awarded to a Fredericton campus student who has graduated from a New Brunswick public high school, is registered as a Mathematics major or honours in the Faculty of Arts or Faculty of Science and has completed at least the minimum requirements for the second year of their degree program, including all required first- and second-year mathematics courses. Selection will be based on academic achievement. At most one new scholarship will be awarded in any given year.	Drs. Daryl and Maureen Tingley, retired members of the UNB faculty.
UNRESTRICTED	Toronto Alumni Chapter Fredrik S. Eaton Scholarship	Unrestricted.	$6,000.	1.	1 year.	Awarded to a student from the Toronto area. Selection is based on academic achievement and involvement in extra-curricular activities.	Toronto Chapter, UNB Associated Alumni.
MULTIPLE	Stanley Frank Trzop Sr. & Jr. Memorial Scholarship	Geology, Geological Engineering, Engineering, or Business.	Variable - up to $3,000/ year.	1 or more.	Up to 3 years.	Awarded to a student who is a graduate of Minto Memorial High School and entering a Geology or Geological Engineering degree program at UNB. It will be awarded based on the student's scholastic achievement; athletic ability and leadership in the school and community will also be considered. Should a qualified candidate not exist in Geology or Geological Engineering, consideration will then be given to a student in any other Engineering degree program, and failing that, consideration will be given to students entering a business program.	Stanley Frank Trzop Jr. in memory of his father Stanley Frank Trzop Sr., and Charles Day, the first Principal of Minto Memorial School.

UNRESTRICTED	Jean F. & Reginald E. Tweeddale Memorial Leadership Award	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students who are graduates of a New Brunswick high school. Selection will be based on leadership ability, academic achievement and financial need. The recipients must be New Brunswick residents, according to the Provincial Government's Student Financial Services guidelines.	The late Reg Tweeddale (BScEE 1935), the late Jean F. Tweeddale, and the New Brunswick Universities Opportunities Fund.
UNRESTRICTED	UNB Alumni Scholarship for International Students	Unrestricted.	Min. $4,000.	1.	1 year.	Awarded to an international undergraduate student enrolled in an undergraduate degree program. Selection will be based on academic achievement and financial need.	UNB alumni and friends.
UNRESTRICTED	UNB Atlantic Promise Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to Indigenous or Black students enrolled in an undergraduate degree program. Selection will be based on academic achievement.	Friends of the University of New Brunswick.
BUSINESS ADMINISTRATION / MANAGEMENT	UNB Atlantic Promise Scholarship in Business	Unrestricted.	Variable.	Variable.	1 year.	Awarded to Indigenous or Black students enrolled in the Bachelor of Business Administration degree program. Selection will be based on academic achievement.	Friends of the University of New Brunswick.
ARTS	UNB Bachelor of Applied Arts Scholarship	Applied Arts.	Variable.	1 or more.	1 year.	Awarded to students who are enrolled in the Bachelor of Applied Arts program on the Fredericton campus. Selection is based on academic achievement. Consideration may be given to financial need and/or extra-curricular involvement. The recipient must be enrolled at UNB while holding this scholarship.	
UNRESTRICTED	UNB Black Bear Wrestling Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the sport of wrestling. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students.	
UNRESTRICTED	UNB Edmonton Alumni Chapter Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program and has demonstrated successful academic performance. Preference will be given to a student who is from the 780 area code region around Edmonton, Alberta.	Edmonton Alumni Chapter.
ENGINEERING	UNB Engineering Alumni Scholarship	Engineering.	$500.	1 or more.	1 year.	Awarded to students in the Bachelor of Science in Engineering degree program. Selection will be based on scholastic attainment. Consideration may be given to financial need and/or extracurricular activities. This scholarship may be open to transfer students.	UNB Engineering Alumni and Friends.
UNRESTRICTED	UNB Fredericton Registrar's Office Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is a graduate of a New Brunswick high school and who has demonstrated successful academic performance.	Staff and friends of the Registrar's Office, UNB Fredericton and the New Brunswick University Opportunities Fund.
UNRESTRICTED	UNB Fredericton Residence Scholarship	Unrestricted.	Residence & Meal Plan.	1 or more.	up to 4 years.	Awarded to Fredericton campus students who are enrolled in an undergraduate degree program. Selection is based on scholastic attainment. Consideration may be given to financial need, leadership qualities, as well as community involvement. Recipients must stay in residence to retain this scholarship. Transfer students may be considered.	

UNRESTRICTED	UNB Hockey Nationals Legacy Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the field of varsity men's hockey. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Proceeds from the CIS Men's National Hockey Championship hosted by UNB in 2002-03 and 2003-04.
ENGINEERING	UNB Mechanical Engineering Alumni Scholarship	Mechanical Engineering.	Variable.	1 or more.	1 year.	Awarded to students enrolled in the Bachelor of Science in Engineering (Mechanical) degree program. Selection is based on academic achievement and financial need.	UNB Mechanical Engineering Alumni.
UNRESTRICTED	UNB Reds Soccer Memorial Award	Unrestricted.	Up to tuition & fees.	1.	1 year.	Awarded to a Fredericton campus student who has demonstrated academic achievement (minimum 2.0 scholarship GPA for returning students, and 80% average for entering students, as per U SPORTS regulations) and special athletic ability and skill in the sport of men's varsity soccer. The recipient will demonstrate leadership, be a team player and place the program and his teammates before his own successes. This award is also open to transfer and graduate students, as well as students who are enrolled in a minimum of 9 credit hours.	Men's soccer alumni and friends.
UNRESTRICTED	UNB Retired Employees Association Bursary	Unrestricted.	$500.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program. The recipient must demonstrate successful academic performance.	UNB Retired Employees Association.
UNRESTRICTED	UNB Saint John Campus Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to Saint John campus students based on academic achievement. Consideration may be given to financial need and/or extracurricular activities. Students transferring from international or domestic institutions may be considered.	The University.
UNRESTRICTED	UNB Scholarship for Academic Excellence	Unrestricted.	Variable.	Multiple.	Up to 4 years.	Awarded to international students who are enrolling in an undergraduate degree program at UNB. Selection is based on academic achievement.	
UNRESTRICTED	UNB Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Awarded primarily on the basis of scholastic attainment.	The University.
UNRESTRICTED	UNB Varsity Reds Curling Scholarship	Unrestricted.	$1,000.	2.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the field of varsity curling. The recipient must have achieved a 2.0 grade point average for a continuing student or an 80% average for a high school student, as per U SPORTS regulations. Consideration may be given to financial need. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Friends of UNB Curling and the Capital Winter Club.
UNRESTRICTED	UNBF Recreation Services Sport Club Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in a sport which is in a sanctioned Recreation Services Sport Club. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Alumni and friends of the UNBF Sport Club Program.
UNRESTRICTED	UNBF Reds Women's Hockey Award	Unrestricted.	Not to exceed tuition and compulsory fees.	Variable.	1 year.	Awarded to Fredericton campus undergraduate or graduate students who have demonstrated talent in the sport of women's ice hockey. Recipients must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Alumni and friends of the UNBF Women's hockey team.

119

UNRESTRICTED	UNBF Yeowomen Soccer Scholarship	Unrestricted.	Min. $250.	1.	1 year.	Awarded to a Fredericton campus student who is a member of the UNB Reds women's soccer and has completed at least the minimum requirements for the first year of an undergraduate degree. The recipient must demonstrate determination and dedication to both the sport and their teammates and have achieved a 2.0 grade point average, as per U SPORTS regulations. This award is open to students who are enrolled in a minimum of 9 credit hours.	Yeowomen Soccer Alumnae who represented UNB soccer in the absence of a varsity team.
UNRESTRICTED	UNBSJ Seawolves Club Football Scholarship	Unrestricted.	Variable.	1 or more.	1 year.	Awarded to a Saint John campus student enrolled in an undergraduate or graduate degree program who has demonstrated talent and/or dedication to the sport of football. Recipients must have achieved a 2.0 grade point average for continuing students or an 65% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Friends and family of the Seawolves football.
UNRESTRICTED	UNBSJ Yeowomen Soccer Scholarship	Unrestricted.	Min. $250.	1.	1 year.	Awarded to a Saint John campus student who is a member of the UNB Seawolves women's soccer team and has completed at least the minimum requirements for the first year of an undergraduate degree. The recipient must demonstrate determination and dedication to both the sport and their teammates and have achieved a 2.0 grade point average, as per CCAA regulations. This award is open to students who are enrolled in a minimum of 9 credit hours.	Yeowomen Soccer Alumnae who kept soccer alive at UNB in the absence of a varsity team.
ARTS	RM Vaughan Memorial Scholarship	English.	$500.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the undergraduate or graduate degree program. Selection will be based on academic excellence including success in one or more Creative Writing course. The recipient must be from New Brunswick. Preference will be given to an individual in the 2SLGBTQIA+ community who is enrolled in the Creative Writing stream.	Family and friends of Richard Vaughan.
MULTIPLE	Ventzek Family Scholarship	Chemical Engineering.	$500.	1.	1 year.	Awarded to a student in the Bachelor of Science in Engineering (Chemical) degree program. Selection will be based on academic achievement and financial need. Preference will be given to an international student.	Dr. Peter Ventzek, BScChE 1986.
UNRESTRICTED	Waggott Family Athletic Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Saint John campus student enrolled in an undergraduate or graduate program who has demonstrated talent and/or dedication in the field of varsity athletics. Recipients must have achieved a 2.0 grade point average for continuing students or a 65% average for high school students. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours, as required by the CCAA. Preference will be given to a student who graduated from Saint John High School.	Pauline Waggott and Thomas Waggott.
UNRESTRICTED	Lois Walker Gillin Scholarship	Unrestricted.	$2,000.	2.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who has demonstrated talent in the sport of UNB Reds women's hockey. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Lois Walker Gillin.
UNRESTRICTED	Punch Walker Memorial Scholarship in Men's Hockey	Unrestricted.	$2,000.	2.	1 year.	Awarded to students in a degree program on the Fredericton campus who are, or will be, members of the University's varsity men's hockey team. Recipients must have demonstrated successful academic performance (minimum 80% admission average for an entering student or minimum 2.0 grade point average for a continuing student, as per U SPORTS regulations). This award is	The late A. Ross "Punch" Walker.

FACULTY	AWARD NAME	field	value	number	duration	conditions	donor
						open to transfer students, as well as students who are enrolled in a minimum of 9 credit hours.	
FORESTRY	Nelson Bertram Welling Undergraduate Entrance Scholarship	Forestry and Environmental Management.	Variable.	Variable.	1 year.	Awarded to undergraduate students in the Faculty of Forestry and Environmental Management. Selection is based on academic achievement. Consideration may also be given to financial need and/or involvement in extracurricular activities. Open to incoming high-school, transfer, and visiting students.	Nelson Bertram Welling.
UNRESTRICTED	George L. White Memorial Scholarship	Unrestricted.	Variable.	Variable.	Up to 4 years.	Awarded on the basis of academic achievement and financial need to graduates of NB high schools.	The estate of George L. White and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Edna Isabel Corbett-Wile Scholarship	Unrestricted.	Approx. $12,000.	1 or more.	1 year.	Awarded to female students who are enrolled in an undergraduate degree program, have graduated from Oromocto High School and are from Queens County with preference given to those from Gagetown. Selection is based on academic achievement. Consideration may be given to financial need.	The estate of Byron Wile.
ENGINEERING	Lawrence S. Willett Memorial Scholarship	Engineering.	$6,500.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Engineering degree program. Selection will be based on scholastic attainment.	The estate of Frances M. Willett, in memory of her husband, Lawrence S. Willett. B.Sc. Eng. (CE) '50.
NURSING	Patricia S. Wilson Scholarship	Nursing.	$3,000.	1.	1 year.	Awarded to a student enrolled in the Bachelor of Nursing degree program on the Fredericton campus. Selection is based on scholastic attainment and financial need. The recipient must be a New Brunswick resident, according to the NB Provincial Government's Student Financial Services guidelines. Preference will be given to a student from the Moncton area.	The Fred and Nadine Taylor Charitable Foundation and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Billy Wong International Scholarship	Unrestricted.	$4,000.	1.	1 year.	Awarded to an international student enrolled in an undergraduate degree program. Selection is based on academic achievement and financial need.	Billy W. Wong (BSE CE 1981).
UNRESTRICTED	Wright Family Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a member of the UNB Reds men's basketball team. The recipient must be in good academic standing and involved in the community. Preference will be given to a resident of New Brunswick. Recipients must have at least an 80% entering average or a 2.0 grade point average in the previous year of study, as per U SPORTS regulations. Transfer students are eligible, as well as students who are enrolled in a minimum of 9 credit hours.	Dr. Phillip Wright, Beth Wright (BEdPE 1982, MEd 2002), Michael Wright (BBA 2008, MBA 2012), Andrew Wright (BBA 2014).
UNRESTRICTED	Women's Hockey Legacy Scholarship	Unrestricted.	$5,000.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate student who is a member of the UNB Reds women's hockey team. The recipient must have achieved a 2.0 grade point average for continuing students or an 80% average for high school students, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Friends of UNB Reds Women's Hockey
PRIZES							
FACULTY	**AWARD NAME**	**field**	**value**	**number**	**duration**	**conditions**	**donor**

121

EDUCATION	Tom Acheson Prize in Art Education					A prize of $750 to be awarded annually on the recommendation of the Faculty of Education to a graduating student who has demonstrated outstanding talent in the field of Art Education. The recipient will have attained both a high overall academic standard and an acceptable level of competence in at least three Art Education courses. The prize has been sponsored by the Provincial Department of Education through the Fred Magee Fund.	
ENGINEERING	AECL Pilkington Prize					A $500 prize to be awarded annually on the recommendation of the Departments of Chemical or Mechanical Engineering to a Fredericton campus student enrolled in the Nuclear Option program or the Energy Conversion Engineering Option program who has achieved the highest grade point average in two or more nuclear-related courses. This prize is funded by the AECL and the friends of Bill Pilkington.	
ARTS	Bernice Alderman Memorial Prize in Psychology					A prize of approximately $150 to be awarded to an outstanding student on the Saint John campus graduating in an honours program in Psychology. The prize is funded by friends of the late M. Bernice (Gorman) Alderman, an honours student.	
ARTS	Alumni Medal					A medal is offered each year by The Associated Alumni to the most outstanding Latin scholar among the undergraduates. The award is made by the Society upon the recommendation of the Department of Classics and Ancient History. No student may receive the medal twice.	
UNRESTRICTED	Alumni Prize					Up to four prizes of $250 each awarded to the students on both campuses who make the highest grade point average on the examinations in the required subjects of the Freshman year. The prize is funded by the UNB Associated Alumni.	
ARTS	Ambassador of Austria's Prize II					A book prize awarded annually on the recommendation of the Department of Humanities and Languages (German section) to a student on the Saint John campus, who has shown a high level of achievement and interest in the language and civilization of German-speaking countries. The prize has been funded by the Government of Austria.	
ARTS	Ambassador of France's Prize II					A book prize awarded annually on the recommendation of the Department of Humanities and Languages (French Section) to a student who has shown a high level of achievement and interest in courses taken for upper year credit. The prize has been funded by the Government of France and is open to students on the Saint John campus.	
ARTS	Ambassador of Switzerland's Prize (German)					A book prize in German awarded annually on the recommendation of the Department of Culture and Media Studies to the graduating students who have made the greatest progress in mastering the German language since entering the University. The prizes are open to students on the Fredericton campus, are funded by the Government of Switzerland.	
ARTS	Ambassador of Switzerland's Prize (French)					A book prize to be awarded annually on the recommendation of the Department of Humanities and Languages (French Section) to the Saint John campus student who has made the greatest progress in mastering the French language since entering the University. The prize has been funded by the Government of Switzerland.	

ARTS	Ambassador of Switzerland's Prize (French)					A book prize in French awarded annually on the recommendation of the Department of French to the graduating students who have made the greatest progress in mastering the French language since entering the University. The prizes are open to students on the Fredericton campus, are funded by the Government of Switzerland.	
ARTS	Ambassador of Switzerland's Prize (German)					A book prize to be awarded annually on the recommendation of the Department of Humanities and Languages (German Section) to a Saint John campus student who has shown a high level of achievement in either German 1000 or German 2000. The prize has been funded by the Government of Switzerland.	
ARTS	Marion Anderson Memorial Prize					One or more prizes totaling at least $1,200, awarded annually on the recommendation of the Department of English to an outstanding student or students entering the Junior level (61-90 ch) Honours program in English Literature on the Fredericton campus. The prize is funded by Ethel Anderson.	Ethel Anderson.
ARTS	Nels Anderson Prize in Sociology					A prize of a minimum value of $125 to be awarded annually on the recommendation of the Department of Sociology to the student majoring or honouring in Sociology on the Fredericton campus entering final year (completed 90 to 110 ch) with the highest standing in Sociology courses (minimum 24 ch which must include the 3rd year required courses). The prize has been funded by faculty members in the Department of Sociology.	
ENGINEERING	Andrin-Mathis Prize in Management					A $250 prize to be awarded annually on the recommendation of the Faculty of Engineering to the student who has successfully completed the Technology Management and Entrepreneurship Diploma program who demonstrates repeated leadership skills in the area of conflict resolution and situational management amongst their peers during the TME diploma program. Graduate students as well as undergraduate students may be considered for this prize. The prize is funded by George Andrin, BScEng (Mechanical), Class of '58 with supporting funds from 3M, Mathis Instruments and others.	
ARTS	Anthropology Book Prize					A book to be awarded annually on the recommendation of the Department of Anthropology to the best graduating honours student in anthropology on the Fredericton campus. The prize is funded by the Department of Anthropology.	
ARTS	Anthropology Book Prize for Leadership and Service					A book prize awarded annually to an undergraduate student who has shown exceptional service and leadership within the department, university, and/or discipline of anthropology. This prize is awarded at Convocation.	
ENGINEERING & SASE	APEGNB Prize I					Two prizes of $2,000 each, one prize may be awarded annually on each campus, on the recommendation of the Faculty of Engineering and Geoscience to a student who has completed the first year of the Engineering or Geoscience degree program, and has attained a high academic standing. The prize is funded by the Association of Professional Engineers and Geoscientists of New Brunswick Foundation for Education.	

SCIENCE, APPLIED SCIENCE & ENGINEERING	APEGNB Saint John Branch Wallace Rupert Turnbull Memorial Prize					A prize of $1,000 to be awarded annually to a deserving student who is enrolled in the second year of studies in the Engineering program at UNB Saint John, who is from the A.P.E.G.N.B. Saint John district (Sussex to St. Stephen), who has achieved high academic standing and who has not received a major prize. An award presentation may be made at an A.P.E.G.N.B. event in addition to the UNBSJ ceremony. The prize is funded by the Saint John Branch of the Association of Professional Engineers & Geoscientists of New Brunswick, and named to honour the late Wallace Rupert Turnbull, the Rothesay inventor of the variable pitch propeller and member of the Canadian Science and Engineering Hall of Fame.	
UNRESTRICTED	Applied Statistics Centre Prize I					A prize of $300 to be awarded annually on the recommendation of the Applied Statistic Centre to Fredericton campus students for outstanding achievement in STAT 3083. The prize is funded by the UNB Applied Statistics Centre.	
UNRESTRICTED	Applied Statistics Centre Prize II					A prize of $300 to be awarded annually on the recommendation of the Applied Statistic Centre to Fredericton campus students for outstanding achievement in STAT 3093. The prize is funded by the UNB Applied Statistics Centre.	
ARTS	Archaeological Institute of America Membership Prize					A one year membership prize to be awarded annually on the recommendation of the Department of Classics & Ancient History to two students on the Fredericton campus who have demonstrated a high level of achievement and keen interest in archaeology. The prize is funded by the Department of Classics and Ancient History.	
SCIENCE	C. W. Argue Prize					One or more prizes of up to $3,000 to be awarded to a Science student having high academic standing and entering either the third or the fourth year. ("Year" refers to the particular year of the program as specified in the calendar description of the various BSc degree options.) When two scholarships are given, they will be awarded as follows: (a) the first one to a Science student, other than one majoring in Biology, (b) the second one to a Biology Major student. The selection of the recipient(s) will be made by the Dean of Science and the heads of the Science Departments.	
ARTS	Arts First Year Economics Prize					A prize, comprised of a book and of approximately $250, will be awarded on the recommendation of the Department of Economics to an undergraduate student in the Faculty of Arts on the Fredericton campus, who has achieved the highest standing in First Year Economics. The prize has been funded by Friends of the Department of Economics.	
ARTS	Dr. A. G. Bailey Alumni Prize					A $250 prize awarded annually on the recommendation of the History Department to a student entering the Senior level (91-120 ch) who has attained high academic standing and also demonstrated a wide interest in History. This prize is funded by the Associated Alumni.	
SCIENCE	Loring Woart Bailey Prize in Science					This prize of $500 was established by the late Joseph Whitman Bailey of the class of 1884 in memory of his father, Loring Woart Bailey, LLD, Professor of Science in the University for nearly fifty years (1861-1907). The prize is to be given alternately in the Departments of Biology and Earth Sciences. The award is made on the recommendation of the Department concerned.	

SCIENCE	Walter Baker Memorial Prize in Physics					This prize has been established by the faculty members of the Department of Physics in memory of Professor Walter Baker, formerly a professor of Physics at the University from 1955-1970. It is awarded on the recommendation of the Department of Physics to a deserving student graduating in Physics. The number of the awards and their value will be at the discretion of the department but there will normally be one prize annually to the value of $100.	
SCIENCE	Dorothy Bennett Elson Prize					An annual prize of $250 has been established by the Associated Alumnae and is awarded to the female student on the Fredericton campus who achieves the highest standing in first year Physics.	
EDUCATION	Viscount Richard Bedford Bennett Prize (Education)					A $750 prize to be awarded annually on the recommendation of the Faculty of Education to an outstanding Bachelor of Education (School Years) student. This prize was established by the late Viscount Bennett.	
FORESTRY	Viscount Richard Bedford Bennett Prize (Forestry)					Two annual prizes of $500 has been established by the late Viscount Bennett to be given to two outstanding students selected by the Faculty of Forestry and Environmental Management, one to be entering third year and one to be entering fourth year.	
ARTS	Biological Anthropology Book Prize					A book to be awarded annually on the recommendation of the Department of Anthropology to a graduating honours student on the Fredericton Campus who demonstrates outstanding academic performance in Biological Anthropology. The prize is funded by the Department of Anthropology.	
ARTS	Dr. David Black Archaeology Book Prize					A book to be awarded on the recommendation of the Department of Anthropology, at Convocation or Encaenia to a graduating honours student on the Fredericton campus who demonstrates successful academic performance in archaeology. The prize is funded by the Department of Anthropology, in honour of Dr. David W. Black. Dr. Black joined the University of New Brunswick as the first full-time archaeologist in the Department of Anthropology in 1991. Now an Honorary Research Professor, he is an expert on the archaeology of coastal hunter-gatherers and the prehistory of northeastern North America. Throughout his career, he taught countless undergraduates, inspiring many to pursue archaeology professionally.	
ARTS	Bruno Bobak Prize in Applied Arts					A $500 prize awarded annually on the recommendation of the Office of the Dean of Arts to a Fredericton campus student enrolled in the Bachelor of Applied Arts degree program who has the highest cumulative GPA in at least 6 ch of Culture Studies and Art History courses completed during the year of the award. The prize is funded by the late Colin B. Mackay.	
ARTS	British High Commissioner's Prize					A book prize awarded annually on the recommendation of the Department of History and Politics. The prize will be awarded alternately to the student with the highest course mark in POLS 2530, The Government of Great Britain, and the student with the highest course mark in HIST 1150, The History of Modern Britain. The prize has been funded by the British High Commissioner and is open to students on the Saint John campus.	
SCIENCE	John Storrs Brookfield Prize					A prize of $1,400 has been established by the late Dr. J.S. Brookfield to be given to a student entering the third year deemed by the professors of Science to be the most promising student in Natural Science. ("Year" refers to the	

					particular year of the program as specified in the calendar descriptions of the various BSc degree options.)	
SCIENCE	Kingsbury Browne Sr. Memorial Prize					An annual award valued at approximately $800 has been established in memory of Kingsbury Browne Sr., a founding director of the Miramichi Salmon Association, Inc., by the Browne family, friends, and members of the Association. It is awarded to a student, majoring in Biology, entering the final year, who has excelled in the general area of vertebrate zoology. Preference is given to a resident of New Brunswick.	
ARTS	Sam & Elenore Budovitch Prize in The Humanities					A prize of approximately $200 to be awarded annually on the recommendation of the Department of History and Politics to an outstanding student who achieves high standing in Classics courses. The prize has been funded by the late Elenore Budovitch.	
ENGINEERING	Sam Budovitch Memorial Prize					A prize of $1,000 to be awarded annually on the recommendation of the Department of Civil Engineering to the student with the highest standing in first year Civil Engineering (35-40 ch). Funded by the late Mr. Sam Budovitch.	
ARTS	Sandra Budovitch Memorial Prize					Mr. and Mrs. Sam Budovitch have established an award in memory of their daughter, Sandra. The prize, having a value of approximately $400, will be given annually to the graduating student having the highest average in Honours Sociology.	
EDUCATION	Sherry Budovitch Prize in Elementary Education					A prize of $400 to be awarded annually on the recommendation of the Department of Curriculum and Instruction, to an outstanding graduating student in the Bachelor of Education (Early Years) program based on student teaching performance. The prize has been funded by Sherry (Budovitch) Rioux.	
ENGINEERING	Harold H. Bulmer Memorial Prize					Two prizes are awarded annually to students participating in the Technology Innovation Pitch (TIP) competition hosted by the Dr. J. Herbert Smith Centre in Technology Management and Entrepreneurship (TME), Faculty of Engineering. First place prize is valued at $500, second place $200. A book selected by the TME Chair will also be presented to the prize recipients. The prize is open to students from all participating institutions. The prize is funded by members of the Bulmer family and the Dr. J. Herbert Smith Centre.	
MANAGEMENT	Business Administration Society Outstanding Student Award					A prize donated by UNB Business Administration Society to be awarded annually to the outstanding student, studying on the Fredericton campus, in the fourth year of Business Administration. The prize is awarded on the basis of the student's participation in campus activities, scholastic standing, character and attitude.	
ARTS	Edwin Botsford Busteed Memorial Prize					An annual prize of $675, bequeathed by the late Mrs. Elliott Henderson Busteed, is to be given to a student having the highest standing in Junior level (61-90 ch) Economics.	
UNRESTRICTED	Adam and Dora Cameron Prize					An annual prize of $1,250 to be awarded to a student who, upon completion of the Freshman year, has made the highest standing in the work of the Freshman year.	
FORESTRY	Canadian Institute of Forestry Gold Medal Award					A CIF gold medal is awarded annually to the student graduating with either a Bachelor of Science in Forestry degree or a Bachelor of Science in Forest Engineering degree who, in the opinion of the Committee of Award, has been outstanding in his class, taking into	

						consideration academic standing and participation in faculty activities.	
ENGINEERING	Canadian Society for Chemical Engineering Prize					A certificate of merit, engraved medal and a cash award of $50 are donated annually by the Canadian Society for Chemical Engineering, to be awarded to a student completing the penultimate year of Chemical Engineering with the highest standing.	
SCIENCE	Canadian Society for Chemistry Silver Medal					A certificate of merit and an engraved medal are donated annually by the Canadian Society for Chemistry, to be awarded to the student with the highest standing in Chemistry and related subjects in the penultimate year.	
ENGINEERING	Canadian Society for Civil Eng. Certificate of Achievement					An award of a certificate and a one-year associate membership in the Canadian Society for Civil Engineering, to be awarded on the recommendation of the Department of Civil Engineering to the top graduating Civil Engineering student, based on the regular work in the final two years (greater than or equal to 48 ch) of the student's regular program. The award is provided by the Canadian Society for Civil Engineering, Atlantic Region.	
ENGINEERING	Cansel Prize					A $2,500 prize awarded annually on the recommendation of the Department of Geodesy and Geomatics to an outstanding student who demonstrates excellence, challenges conventional thought, or explores new theories in our geospatial community. The student may be enrolled in GGE2013, GGE4700 or other courses utilizing geospatial instruments. This prize is funded by Cansel.	Cansel.
ARTS	Bliss Carman Memorial Prize					A $250 prize awarded annually on the recommendation of the Department of English to an undergraduate submitting the best group of six poems of not more than forty lines each. No student may win the prize more than twice. The prize is funded by the late Dr. Lorne Pierce.	
BUSINESS	Erskine Ireland Carter Memorial Prize in Business Admin.					A prize of $3,500 to be awarded annually on the recommendation of the Faculty of Business to the graduating student in Business on the Saint John campus who has attained high academic standing, and has shown exemplary service to the university community. The prize has been funded by family and friends of the late Erskine Ireland Carter (BA Honours Psychology, UNB, 1992, and was enrolled in MBA). He was an outstanding student in Business Administration and Psychology on the Saint John campus, and he epitomized scholastic excellence and strength of character.	
ARTS	Erskine Ireland Carter Memorial Prize in Psychology					A prize of $3,500 to be awarded annually on the recommendation of the Department of Psychology to the student on the Saint John campus who is entering the final year in Psychology and has attained high academic standing, and shown exemplary service to the university community. The prize has been funded by family and friends of the late Erskine Ireland Carter (BA Honours Psychology, UNB, 1992, and was enrolled in MBA). He was an outstanding student in Psychology and Business Administration on the Saint John campus, and who epitomized scholastic excellence and strength of character.	
ARTS	W. S. Carter Memorial Prize					An annual prize of $240, established by the late Mrs. W.S. Carter, is given to an outstanding student in Freshman level (1-30 ch) English.	
ARTS	Robert Ellis Dieuaide Cattley Prize in Classics					A prize in memory of the late Dr. R.E.D. Cattley, long-time Professor and Head of the Department of Classics and Ancient History, and Professor Emeritus, to be awarded annually to the undergraduate student or students in the	

						Arts Faculty on the Fredericton Campus who have successfully completed 30 ch of courses with at least 6 ch of introductory Classics courses offered by the Department. The prize will be awarded on the recommendation of the Department of Classics and Ancient History and will be based on the student's overall interest and academic performance. The prize is funded by the family of Dr. Cattley, and by friends, colleagues, and former students.	
ARTS	James K. Chapman Prize in History					A prize of $100 to be awarded annually on the recommendation of the Department of History for the outstanding presentation of a historical topic in such alternative forms as voice recordings, video tapes, games analyses, or computer projects. The prize has been established by Professor James K. Chapman to promote forms of expression in historical study other than written essays.	
ARTS	Rhoda Chapman Memorial Prize				1 year.	Two prizes of $2,000 each to be awarded annually, on the recommendation of the Undergraduate Committee in the Department of History, to Fredericton campus students who have demonstrated outstanding academic achievement and have shown promise in at least one undergraduate or graduate course in the field of art history. At least one annual prize will normally be awarded to a student who has not yet completed more than 66 credit hours at the time of the award. The prize has been established to commemorate Rhoda Chapman's love of art, to reward students for outstanding achievement and to encourage further study in the field of art history. Rhoda Chapman was the wife of the late James K. Chapman, Professor of History, UNB Fredericton.	
ENGINEERING	Chemical Engineering Faculty Prize					An annual prize of $500 has been established by the faculty members of the Department of Chemical Engineering to be awarded to the student who has attained the highest standing in the final year of Chemical Engineering.	
ENGINEERING	K. R. Chestnut Memorial Prize					An annual prize of $1650 was bequeathed to UNB by the late Mrs. Annie H. Chestnut. It is to be awarded to an outstanding student in the Faculty of Engineering on the recommendation of the Engineering Awards Committee.	
FORESTRY	CIF/UNB Joint Professional Development Forestry Award					Awards to be used to help defray travel expenses for attending the Annual General Meeting of the Canadian Institute of Forestry, to be awarded annually on the recommendation of a committee made up of representatives of the CIF Maritime Section and the Faculty of Forestry and Environmental Management, to continuing students after completion of at least 30 ch in the BScF or BScFE degree programs. The award has been funded by the Maritime Section of the CIF and the Faculty of Forestry and Environmental Management.	
SCIENCE	City of Fredericton Award					The City of Fredericton offers a sum of money, not less than $200, for competition in the Department of Civil Engineering and Chemistry and in the Faculty of Forestry and Environmental Management in rotation. The prize, which heretofore took the form of a gold medal, was offered for the first time in 1908.	
SCIENCE	City of Saint John Award					A prize of $500 and a plaque to be awarded annually at Spring Convocation on the Saint John Campus to the academically outstanding graduating student who completes his/her degree while registered in a Saint John	

						Campus program. The prize has been funded by the Saint John Faculty.	
UNRESTRICTED	William Webster Scholarship	Unrestricted.	$5,000.	1.	1 year.	Awarded to a student who has graduated from Sussex High School and is beginning an undergraduate degree program on the Fredericton campus. Selection is based on scholastic achievement and extra-curricular activities.	William W. D. Webster (BA 1959).
UNRESTRICTED	Class of 1909 Prize					Through the generosity of graduates of the class of 1909, a prize of $4,000 will be given annually to a member of the graduating class who has shown distinction in the final year, but who has not qualified for an award otherwise.	
ARTS	Dr. Anne Compton Creative Writing Prize in Poetry					A $500 prize to be awarded annually on the recommendation of the members of the Discipline of English in the Department of Humanities and Languages to a full-time or part-time student on the Saint John campus who demonstrates excellence in the creation of poetry. The prize is funded by Dr. Gordon Chapman.	
COMPUTER SCIENCE	Computer Science Prize for Best Senior Honours Thesis					A prize of $200 to be awarded annually on the recommendation of the Faculty of Computer Science to the Fredericton campus BCS student (or BCS concurrent degree student) whose senior honours thesis (CS4997) is judged to be the best in that academic year.	
COMPUTER SCIENCE	Computer Science Prize for Best Senior Technical Report					A prize of $100 to be awarded annually on the recommendation of the Faculty of Computer Science to the Fredericton campus BCS student (or BCS concurrent degree student) whose senior technical report (CS4983) is judged to be the best in that academic year.	
COMPUTER SCIENCE	Computer Science Prize I					A prize of $250 to be awarded annually to the best student who has just completed one year of study on the Fredericton campus in an undergraduate degree program in the Faculty of Computer Science. The prize is awarded on the basis of academic performance in the first year of studies in the degree program.	
COMPUTER SCIENCE	Computer Science Prize II					A prize of $250 to be awarded annually to the best student on the Fredericton campus who has just completed three years of study in an undergraduate degree program in the Faculty of Computer Science. The prize is awarded on the basis of academic performance in the third year of studies in the degree program.	
UNRESTRICTED	Dr. Ann Gorman Condon Academic Athletics Achievement Award					Two $500 prizes will be awarded annually on the recommendation of the Director of Athletics to students who have demonstrated academic excellence and have contributed significantly to a sport on the Saint John campus. Consideration will be given to the student's involvement in extra-curricular activities such as Howl with the Wolves and Adopt a School. One prize will be given to a male student and one prize will be given to a female student. The prize is funded by the friends and family of Dr. Ann Gorman Condon.	
ARTS	Consulate General of the Federal Republic of Germany Prize					Two book prizes to be awarded annually on the recommendation of the Department of Humanities and Languages (German section) to Saint John campus students who have shown a high level of achievement in German 1000 and German 2000 respectively. These prizes have been funded by the Consulate General of the Federal Republic of Germany.	
SCIENCE	Dr. Philip Cox Memorial Prize					A $200 prize awarded annually to a student entering the third year and majoring in Biology who, in the opinion of the staff of the Department of Biology, shows the greatest promise. ("Year" refers to the particular year of the program as specified in the calendar descriptions of the various BSc degree options.)	

MANAGEMENT	CPA Prize UNB Fredericton					One prize of $1,000 will be awarded to a student in the Business Administration degree program on the Fredericton campus who has declared honours in accounting and has the highest combined GPA in ADM 3215, ADM 3216, ADM 3225, and ADM 3415. The prize is funded by CPA New Brunswick.	
BUSINESS	CPA Prize UNB Saint John					One prize of $1,000 will be awarded to a student in the Business Administration degree program on the Saint John campus with the highest GPA calculated on the basis of all Accounting courses taken at UNB Saint John. The recipient must have completed at least two years of full-time study and completed a minimum of four accounting courses. The prize is funded by CPA New Brunswick.	
KINESIOLOGY	CSEP/SCPE Undergraduate Student Award					A medallion and a citation is awarded annually on the recommendation of the Faculty of Kinesiology to the student graduating with a Bachelor of Science in Kinesiology who has achieved the highest academic standing in the scientific portion of the curriculum. This award is provided by the Canadian Society for Exercise Physiology/Société Canadienne de Physiologie de l'Exercice.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Christopher Cusack Computer Science & Data Analysis Prize					A prize of $500 to be awarded annually on the recommendation of the Department of Computer Science and Applied Statistics to a Saint John campus student graduating with a Bachelor of Information Sciences or a Bachelor of Science in Computer Science degree who has demonstrated academic excellence in upper-level courses in data analysis, statistics, mathematics and computer science. The prize is funded by friends of the late Christopher Cusack BSc(DA) 1981.	
ARTS	Culture & Media Studies Spanish Book Prize					A book prize awarded annually on the recommendation of the Department of Culture & Media Studies, to a Frederiton campus SPAN 1204 student who has achieved excellence in the study of Spanish and is proceeding to the Intermediate level (SPAN 2203). This book prize is provided through a donation from the Estate of Joe Blades. Joe Blades (1961-2020) was a Fredericton-based editor, poet and activist; he published bilingual (Spanish-English, Spanish-French) and trilingual (Spanish, English, French) books.	
NURSING	Dr. Eli Davis Memorial Prize					A prize of $250 to be awarded annually on the recommendation of the Department of Nursing and Health Science to a Nursing student on the Saint John campus. The recipient will have demonstrated excellence in patient care in the area(s) of operating room, recovery room, and/or post-anesthetic nursing care during their fourth year of the Bachelor of Nursing degree program. The prize is funded by the Greater Saint John Community Foundation in memory of Dr. Eli Davis.	
MULTIPLE	Deloitte Prize in Accounting					Two prizes of $1,000 each for students in the Business Administration degree program: one prize awarded to a full-time student on the Fredericton campus, and one prize awarded to a full-time student on the Saint John campus. Recipients must have high standing in Accounting courses, including Intermediate Accounting I (ADM 3215 - UNBF, BA 3235 - UNBSJ), and Intermediate Accounting II (ADM 3216 - UNBF, BA 3236 - UNBSJ), and have completed 90 ch of the BBA degree program at UNB. The prize is funded by Deloitte & Touche.	

ARTS	Department of Culture and Media Studies Prize					Two annual prizes of $250 each awarded to students on the basis of academic excellence and student engagement, normally one to a student pursuing a Major or Honours in Comparative Cultural Studies and one to a student pursuing a Major or Honors in Media Arts and Culture, entering their final year of studies. Awarded based on the recommendation of the Department of Culture and Media Studies faculty. The prize is funded by the International Fiction Review and members of the department.	
ARTS	Department of French Prize for Graduates High School Immersion French					An annual prize to be awarded to the student on the Fredericton campus, graduate of a High School Immersion Program, whom the Department of French considers to have done the most satisfactory work (6 ch) in French 1184 and French 1194. The prize has been sponsored by the Department of French.	
ARTS	Dept. of Humanities & Languages Prize in English					A prize of $1,000 to be awarded on the recommendation of the members of the English discipline Saint John campus, to the student who has achieved the highest standing over at least 24 ch of courses in English completed within the first 90 ch. The prize is funded by the Department of Humanities and Languages.	
ARTS	Dept. of Humanities & Languages Prize in Philosophy					A prize of $1,000 to be awarded annually on the recommendation of the Department of Humanities and Languages (Philosophy Discipline) to the student who has achieved the highest standing over at least 24 ch of courses in Philosophy completed within the first 90 ch. The prize is funded by the Department of Humanities and Languages.	
SCIENCE	Department of Mathematics Prizes in Enriched Calculus					Two prizes of $450 each to be awarded annually to students enrolled in enriched calculus on the Fredericton campus. The prizes will be awarded to the top students who, in the opinion of the Department of Mathematics and Statistics, show the greatest promise in Mathematics. The prize has been established by Dr. Kuldip Singh.	
ARTS	Department of Social Sciences Prize in Sociology					A $250 prize to be awarded annually on the recommendation of the faculty members in the discipline of Sociology to a deserving Sociology major/honours student on the Saint John campus. The prize is funded by the faculty members in the discipline of Sociology.	
ARTS	Department of Sociology Prize					A prize value of $750 to be awarded annually on the recommendation of the Department of Sociology to the student majoring or honouring in Sociology on the Fredericton campus entering their final year (having completed 90 - 111 ch) with the highest standing in non-required Sociology courses.	
ARTS	Dept. of Culture & Media Studies Third Century Award					A prize of approximately $750 to be awarded annually on the recommendation of the Department of Culture and Media Studies to a Fredericton campus student who has completed second year Spanish courses with distinction and is enrolled in third or fourth year Spanish courses. The prize has been funded by members of the Department of Culture and Media Studies. A student may receive this award more than once.	
ENGINEERING	Eugene E. Derenyi Alumni Prize in Remote Sensing					A $500 prize to be awarded annually on the recommendation of the Department of Geodesy and Geomatics to the Fredericton campus student who achieves the highest grade in the remote sensing course GGE 3342: Imaging and Mapping I. The prize is funded by contributions from Alumni at the GGE (SE) 40th Anniversary Reunion held June 22-23, 2001.	

SCIENCE	T. G. Dilworth Prize in Ecology					At least one $350 prize to be awarded annually to the graduating student on the Fredericton campus who has the highest overall standing in ecology courses completed as part of their Bachelor of Science (Biology) degree program. This prize is funded by Andy S. Didyk.	
ARTS	Dr. Fred Donnelly Memorial Prize in History & Politics					A $1,000 prize to be awarded annually on the recommendation of the Department of History & Politics, to a student enrolled in the Faculty of Arts on the Saint John Campus and who has completed at least ten term-courses (30 ch), shows high academic achievement in History and/or Politics courses, and is actively involved in campus life and in the community. The prize is named in memory of Dr. Fred Donnelly PhD, who was a professor of History at UNBSJ from 1979-2012 and recipient of the President's Medal for Outstanding Career Contributions. The prize is funded by family, faculty, staff, friends and former students of Dr. Fred Donnelly.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dorrie Award for Nursing					A prize of $500 to be awarded annually, on the recommendation of the Department of Nursing, to an outstanding graduating student who achieves the highest cumulative grade point average in the Bachelor of Nursing Program on the Saint John campus. The prize has been funded by MindCare New Brunswick.	
UNRESTRICTED	Douglas Gold Medal					A gold medal is offered for competition every year among undergraduates. This medal was founded by the late Sir Howard Douglas, Lieutenant-Governor of the Province of New Brunswick and first Chancellor of King's College. It is awarded for the best composition in prose or verse in the Greek, Latin or English languages, on any subject within the regular course of study pursued in the university. Undergraduate theses or reports may be considered along with essays or verse compositions produced as part of regular class work. They may be revised by the student on the basis of instructors' comments. Compositions are submitted by instructors, with the consent of the student, through the department to a committee appointed by the Dean of Graduate Studies and Research. The medal is awarded at Encaenia.	
UNRESTRICTED	Sir Howard Douglas Award					Open to full and part-time undergraduate students who have completed the equivalent of at least year two of an undergraduate degree program, have achieved Dean's List in the previous year, and are nominated by their Faculty. Selection will be based on two factors: scholastic attainment and involvement in extra-curricular and/or co-curricular activities. Scholastic attainment will be measured by the student's GPA. The nature of the students' extra-curricular and/or co-curricular activities will be assessed on the basis of the significance of the student's contribution, any innovation related to the activity, amount and time of involvement, its independence from actual course or program work, its independence from remuneration, and its linkage to the student's overall growth as a human being.	
UNRESTRICTED	Dr. James Downey Student Leadership Award					Awarded on the basis of "outstanding contribution to student life" to a student who is a member of the UNB Student union (i.e. Paid the student activity fee). The recipient must be in good academic standing. The award is made on the basis of nominations. Advertisements for the award and a call for nominations or applications will be made annually by the Office of the Assistant Vice-President, Student Services. Ideally, the award is to be presented at the Annual Student Union Banquet. Should	

						there be no banquet, the Assistant Vice-President of Student Services may select another appropriate forum.	
SCIENCE	Dr. A. Wilmer Duff Memorial Prize					Dr. Ella Duff Good has given a prize of $100 in memory of her father, Dr. A. Wilmer Duff, who was a graduate of the University and later taught with distinction at the institution. It is to be awarded to a deserving student in the final year of Physics, but may be given in any other science if there is not a qualified student in Physics.	
ARTS	Cyrus and Anne Eaton Prize in American Studies					Prizes in American History and American Literature, awarded annually to the student or students in the graduating class judged to have done the most distinguished work in American studies. The awards will be determined by a committee of professors from the different Departments offering courses in American studies.	
ARTS	English Departmental Essay Prize IV					A prize of $100 to be awarded annually on the recommendation of the Department of English to a student on the Fredericton campus who has completed the normal requirements for the fourth year of the program in which the student is registered and has written an outstanding essay in any English course in that year. The prize has been funded by the English Departmental Prize Fund.	
ARTS	English Departmental Essay Prize I					A prize of $100 to be awarded annually on the recommendation of the Department of English to a student on the Fredericton campus who has completed the normal requirements for the first year of the program in which the student is registered and has written an outstanding essay in any English course in that year. The prize has been funded by the English Departmental Prize Fund.	
ARTS	English Departmental Essay Prize II					A prize of $100 to be awarded annually on the recommendation of the Department of English to a student on the Fredericton campus who has completed the normal requirements for the second year of the program in which the student is registered, and has written an outstanding essay in any English course in that year. The prize has been funded by the English Departmental Prize Fund.	
ARTS	English Departmental Essay Prize III					A prize of $100 to be awarded annually on the recommendation of the Department of English to a student on the Fredericton campus who has completed the normal requirements for the third year of the program in which the student is registered and has written an outstanding essay in any English course in that year. The prize has been funded by the English Departmental Prize Fund.	
UNRESTRICTED	Christena Estey Memorial Award					A prize of $500 to be awarded to a Saint John campus student enrolled in an undergraduate degree program who has demonstrated talent in the field of athletics and/or involvement in extracurricular activities. The recipient must demonstrate successful academic performance. The prize is being funded by family and friends of the late Christena Estey, former manager of the Bookstore and avid supporter of athletics on the Saint John campus.	
FORESTRY	G.D. Estey Memorial Prize					A book prize was established by the late Mrs. Estey in memory of her husband Gerald D. (Jake) Estey of the class of 1949. This prize is awarded to a deserving graduating student in Forestry or Forest Engineering, who, in the opinion of the Faculty of Forestry and	

						Environmental Management, is most interested in practicing sound principles of forestry.	
MANAGEMENT	Exmoor Prize					A prize of $500 is awarded annually to the Fredericton campus student enrolled in the Business Administration (BBA) program who attains the highest grade point average in the required courses in Finance and in Managerial Accounting. (Currently these are ADM 2413, ADM 3415 and ADM 2223). The courses must be taken at UNB but may be taken at any time during the year. All students who complete the final course of the group in the twelve months ending in May will be considered for this prize. (In the event of a tie, the student with the highest cumulative grade point average will be selected.) The prize has been funded by Mr. S.S. Mullin.	
BUSINESS	Faculty of Business Prize					A prize of $450 to be awarded annually on the recommendation of the Faculty of Business, on the basis of academic achievement and overall contribution to campus and community life, to an outstanding student, who is enrolled in the BBA program on the Saint John campus and has completed two years of study towards the BBA degree. The prize is being funded by faculty members and friends of the Faculty of Business.	
FORESTRY	Faculty of Forestry Senior Project Award					A book prize given to the student who presents the best senior project in Forestry or Forest Engineering. The recipient will be determined by a committee of the Faculty of Forestry and Environmental Management. The book is provided by courtesy of John Wiley & Sons Canada Ltd.	
SCIENCE	Dr. John A. Findlay Chemistry Prize					A prize of $1,000 to be awarded annually on the recommendation of the Dean of Science in consultation with the Chair of the Chemistry Department to a student who has attained the highest standing in second year Science who is majoring or honoring in Chemistry. The prize is funded by Dr. Chok Ngee Chong (BSc 1967; BEd 1968), Kok Kiang Chua (BSc 1967; Bed 1968) and Cyril Tang (BSc 1967).	
ARTS	Barbara Elizabeth Fisher Founder Prize in Psychology					Normally one prize of $1,000 to be awarded annually on the recommendation of the Saint John Psychology Department to the student who presents the best Psychology Honours thesis. However, the prize may also be awarded to more than one student. The prize has been funded by the Saint John Psychology Department to honour Professor B. E. Fisher, the founder of the Psychology Department on the Saint John campus.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Jean Crawford Flemming Memorial Prize					A prize of $750 to be awarded in the Fall term on the recommendation of the Dean of SASE to a Saint John campus student who has completed the minimum requirements for the first year of the BCS, BScCS or BISc. Students who have completed the minimum requirements for the first year of Arts or Science and have indicated their intention to Major in Mathematics or Statistics will also be considered. Selection will be based on academic achievement. The prize is funded by J. Archie Flemming, a former Professor of Mathematics and Statistics at UNB Saint John.	
FORESTRY	B. W. (Barney) Flieger Memorial Prize					One prize of at least $3,000 to be awarded annually on the recommendation of the Faculty of Forestry and Environmental Management to an outstanding student in the third year of the program leading to the degree of Bachelor of Science in Forestry who achieved high academic standing in the second year. The prize has been funded by Forest Protection Limited.	

FORESTRY	Lucien J. Forcier Prize in Silviculture					A prize of $175 is offered from a fund established in memory of Lucien J. Forcier by his friends and colleagues to be awarded annually on the recommendation of the Faculty of Forestry and Environmental Management to an outstanding graduating student who has demonstrated achievement in Silviculture.	
FORESTRY	Forest Products Research Society Award					A prize of $100 and a one year society membership established by the Forest Products Research Society, Eastern Canadian Section, to be awarded annually, on the recommendation of the Faculty of Forestry and Environmental Management, to an undergraduate student for academic achievement in the field of wood science.	
FORESTRY	Foresters' Excellence Award					A $1,000 prize to be awarded annually to a student enrolled in the fourth or fifth year of the Bachelor of Science in Forestry or Bachelor of Science in Forest Engineering degree program. Candidates are required to submit an essay on the role of the professional forester. The prize is funded by alumni and friends of the Faculty of Forestry.	
ARTS	Archdeacon Forsyth Prize					An award of $200, established by the late Archdeacon David Forsyth, is given to the English Literature student who displays the greatest proficiency in the knowledge of English Literature. Presented on the recommendation of the Chair of the Department of English.	
UNRESTRICTED	Dr. Berton C. Foster Memorial Prize					An annual prize of $1,000 to be given to a student from a Fredericton high school-other than a Beaverbrook Scholar-who has made the highest standing in the work of the Freshman year. The scholarship has been established by Mrs. Agnes S. Foster.	
UNRESTRICTED	Carl Fraser (BBA 1974) Student Awards					Ten awards of $1,000 to be awarded annually on the recommendation of the Selection Committee full time Saint John campus students who have completed at the least the minimum requirements for the first year. Recipients must demonstrate successful academic performance. Selection will be based on involvement in student activities, university activities and/or community activities. Consideration may be given to financial need. This award is funded by Carl Fraser BBA 1974.	Carl Fraser BBA 1974.
ARTS	Norman S. Fraser Prize in Arts					A prize of $500 to be awarded annually on the recommendation of the Faculty of Arts to the student with the highest standing in the Junior and Senior years of Bachelor of Arts program. The prize has been funded by the late Norman S. Fraser.	
EDUCATION	Norman S. Fraser Prize in Education					A prize of $500 to be awarded annually on the recommendation of the Faculty of Education to a graduating student in the Bachelor of Education program who has shown potential for a high degree of professional ability as a teacher. The prize has been funded by the late Norman S. Fraser.	
SCIENCE	Norman S. Fraser Prize in Science					A prize of $500 to be awarded annually on the recommendation of the Faculty of Science to the student with the highest standing in the Junior and Senior years of the Bachelor of Science program. The prize has been funded by the late Norman S. Fraser.	
MANAGEMENT	Bernard and Lillian Freeman Prize					A $1,000 prize to be awarded annually on the recommendation of the Faculty of Management to the Fredericton campus student who achieves the highest standing after completing the first year of studies in the Bachelor of Business Administration degree program. The prize is funded by the estate of Lillian Freeman.	Lillian Freeman.

ARTS	Ralph St. J. and Charles E. Freeze Prize					An annual prize of $180 bequeathed by the late J. Arthur Freeze to be given to an outstanding scholar in Sophomore level (31-60 ch) English.	
ARTS	Gilberte Gagnon Memorial Prize					A prize of $500 to be awarded annually on the recommendation of the Department of French to the graduating student on the Fredericton campus who has, in the opinion of the Department, shown the highest achievement in the study of French linguistics. The prize has been funded by the Department of French.	
ENGINEERING	L.A. Gale Prize					A $545 prize awarded annually on the recommendation of the Department of Geodesy and Geomatics Engineering to a Canadian student, upon completion of six terms of Geodesy and Geomatics Engineering, who shows academic promise and is in need of financial assistance.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Thyra Pearl Gander Prize in Pediatric Nursing					A $500 prize awarded annually on the recommendation of the Department of Nursing and Health Sciences to a nursing student on the Saint John campus who is graduating from the Bachelor of Nursing degree program, who has demonstrated excellence in practice of pediatric nursing in the care of patients and exhibits a passion for the field of pediatric nursing. The prize is funded by Dr. Sarah Gander (BSc 2000), Department of Pediatrics, Saint John Regional Hospital in memory of her grandmother who was a registered nurse.	
ENGINEERING	Garson Memorial Prize					The late Abram I. Garson bequeathed the sum of $2,000 to the University, the investment earnings therefrom to be awarded annually to the student registered in the Faculty of Engineering who, in the first year, attains the highest standing. The amount will be approximately $300.	
NURSING	C.H. Gibson Prize for Biology in Nursing					A $350 prize to be awarded annually to the graduating student at the Fredericton site who has the highest overall standing in Biology courses completed as part of his/her Bachelor of Nursing degree. This prize is funded by Andy S. Didyk.	
FORESTRY	J. Miles Gibson Forestry Award					A prize awarded annually on the recommendation of the Gibson Award Committee to one or more students entering the second year of a program leading to the degree of Bachelor of Science in Forestry or Forest Engineering. The prize is funded by the friends of J. Miles Gibson.	
ENGINEERING	Gerhard Gloss Prize in Cartography					A prize to be awarded annually on the recommendation of the Department of Geodesy and Geomatics Engineering to a student in any faculty on the Fredericton campus who has designed and published a map of high technical and artistic merit. The map may be produced using traditional or computer-assisted cartographic techniques. The prize has been funded by friends and colleagues of Professor Gerhard Gloss.	
MANAGEMENT	Levine Goldman Memorial Prize					A prize of $800 to be awarded annually on the recommendation of the Faculty of Management to the full-time Fredericton campus student in the Business Administration degree program who attains the highest assessment year grade point average in the penultimate year of the degree program. The prize has been donated by the family of the late Mr. & Mrs. P. M. Levine.	
SCIENCE	Dr. Donald "Digger" Gorman Prize in Earth Sciences					A $1,000 prize to be awarded annually on the recommendation of the Department of Earth Sciences to an outstanding Fredericton campus student entering the second year of the Bachelor of Science degree program who achieves high standing in Earth Sciences. The prize has been funded by Donald "Digger" Gorman.	

UNRESTRICTED	Governor General's Gold Medal					One gold medal is awarded to the student who achieves the highest academic standing at the graduate level.	
UNRESTRICTED	Governor General's Silver Medal					A silver medal to be awarded annually to the undergraduate student who achieves the highest academic standing in an undergraduate Bachelor's degree program. The medal is awarded at Encaenia.	
ARTS	Graham Prize in Military History					A $200 prize to be awarded annually on the recommendation of the Department of History, for the best essay by a student on the Fredericton campus in an undergraduate seminar in war history. The prize has been endowed by friends, colleagues, and students of Dr. D.S. Graham in recognition of his contribution to scholarship.	
ARTS	Paul Frederick Graham Memorial Prize					A prize of $1,000 to be awarded annually in memory of Paul Frederick Graham, a former student at UNB. The prize is awarded on the recommendation of the Department of Political Science to an outstanding graduating student on the Fredericton Campus who, on graduation in Political Science, has the best academic record in the final year of the program. The prize has been funded by the family of Paul Frederick Graham.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Pauline Graham Prize					A $400 prize to be awarded in the Fall term for a student in the BISc or BScCS program who upon completion of at least 30 ch has an outstanding average in the required first level Mathematics, Computer Science and Statistics courses. The award is made on the recommendation of the Dean of SASE. The prize has been funded by friends of Pauline Graham, former Professor of Mathematics and Statistics at UNB, Saint John.	
ARTS	Dr. Vicky Gray Memorial Award					A $1,000 prize awarded annually to a woman student on the Fredericton campus student engaged in full- or part-time study who is entering the final year of the current degree program and has a continuing interest in and commitment to Women's Studies. The recipient normally will have completed the introductory course in Gender and Women's Studies and be enrolled in the Minor, Double Major or Joint Honours program in Gender and Women's Studies or a comparable course of studies. A minimum grade point average of 3.0 in the last 30 credit hours undertaken is required. The prize is funded by the Estate and Friends of Dr. Vicky Gray. While students may be nominated by a member of the Gender and Women's Studies faculty, they may also apply for the award. A Selection Committee composed of the Coordinator of the Gender and Women's Studies Program, a representative of the Estate of Dr. Vicky Gray, and two other members of the Gender and Women's Studies Program will select the recipient.	The Estate and Friends of Dr. Vicky Gray.
SCIENCE	Friedrich Grein Prize in Chemistry					A prize of at least $100 is awarded to a graduating student from the Bachelor of Science degree program (Chemistry or Medicinal Chemistry) with the highest standing. The prize is awarded on the recommendation of the Department of Chemistry. The number of awards and their value will be decided upon each year at the discretion of the department. This prize has been established by faculty members of the Department of Chemistry in honour of Professor Emeritus Friedrich (Fritz) Grein, whose distinguished career at the University began with his initial appointment in 1962 and continued as Professor Emeritus from 1995. Dr. Grein's research in theoretical chemistry has resulted in over 200 publications and earned international distinction, while his award-winning skill as	

						an undergraduate and graduate teacher was widely respected.	
EDUCATION	Mary Grey Memorial Prize					A prize of $250 to be awarded annually on the recommendation of the Faculty of Education to a student in the Special Education area of the DAUS program. Preference may be given to those who have demonstrated an interest in working with persons with mental disabilities. The prize has been funded by the New Brunswick Association of Auxiliary Teachers and will be presented at the Graduation reception.	
ENGINEERING	Allan K. Grimmer Prize					Four prizes of $1,200 each awarded annually on the recommendation of the Department of Civil Engineering to students who have completed two years of study of the regular program in the Department of Civil Engineering. Preference will be given to applicants with high academic qualifications, who are not already in receipt of a major scholarship. The prize is funded by the late Allan K. Grimmer	
ARTS	F. Howard Grimmer Prize					An annual prize of $200 bequeathed by Miss Bessie T. Grimmer for proficiency in the courses required for the Freshman level in the Faculty of Arts as selected by the University authorities.	
COMPUTER SCIENCE	Govind and Lakshmi Gujar Computer Science Prize					A prize to be awarded annually on the recommendation of the Faculty of Computer Science to the outstanding graduating student in Computer Science on the Fredericton campus with the highest cumulative grade point average. The student must have completed a minimum of three quarters of the degree program at UNB. The student receiving this prize may or may not be the same person who receives the Lieutenant-Governor of New Brunswick Silver Medal (since the selection criteria are different). The prize has been funded by Mrs. Sarita U. Gujar and Professor Uday G. Gujar to honor Prof. Gujar's parents.	
ARTS	Amelia Hall Memorial Prize					A prize of $300 to be awarded annually on the recommendation of the members of the Discipline of English in the Department of Humanities and Languages to a student at the Saint John campus entering the fourth year (90 to 120 ch) who has shown academic promise in prior courses in Dramatic Literature and/or Theatre Arts. The prize has been established by Mrs. M.A. MacDonald in memory of Amelia Hall, distinguished Canadian actress for many years with the Stratford Festival, and one of its founding members.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. Satya Paul Handa Prize in Medical Nursing					A $500 prize to be awarded annually on the recommendation of the Department of Nursing to a Saint John campus student graduating from the Bachelor of Nursing degree program who has demonstrated excellence in the theory and practice of medical nursing in the care of patients and families experiencing kidney disease, hypertension, kidney transplantation or other chronic illnesses. The prize is funded by Dr. Satya Paul Handa, recipient of an Honorary Doctor of Science degree from UNB Saint John May 2003.	
ARTS	J. Carlisle Hanson Prize in Rights, Freedoms, and the Media					An $800 prize awarded annually, on the recommendation of the Arts Council Committee on Prizes, to a Fredericton campus student enrolled in an undergraduate Arts program who writes an outstanding essay on a subject related to the intersection of media, rights and freedoms (e.g. freedom of speech, particularly freedom of the press; Legal and regulatory policy; media and international	

						human rights; copyright or intellectual property rights in the information age; information technology and privacy; transparency and access to information;corporatization of media). Preference will be given to a paper written by a student in the Law in Society Program. This prize is funded by James Carlisle Hanson, Q.C. (BA 1946, BCL 1951) of Ottawa, to commemorate his dedication to the protection of free speech.	
ARTS	Richard Burpee Hanson Prize					A $450 prize to be awarded annually to a male student, other than a Beaverbrook Scholar, who has registered for the full Junior level (61-90 ch) in the Faculty of Arts, having completed the Freshman (1-30 ch) and Sophomore level (31-60 ch) in Arts at the University of New Brunswick or the sophomore level (31-60 ch) in Arts at such University and who has made the highest grades in English and History in the Sophomore level (31-60 ch) in Arts. The prize is funded by Mrs. R.B. Hanson.	Mrs. R.B. Hanson.
SCIENCE	Thomas Harrison Memorial Prize					An annual prize of $750, given to a student who has completed two years (at least 60 ch) of the program in which the student is registered, and in the opinion of the Mathematics Department, shows the greatest promise in Mathematics. This prize was established by the late Mrs. Ida G.W. Harrison.	
ARTS	W. H. Harrison Prize for Conversational French UNBSJ					A prize of $250 to be awarded annually on the recommendation of the Department of Humanities and Languages to the graduating Saint John campus student who has shown the highest achievement in the oral skills of French. The prize has been funded by the estate of the late W.H. Harrison. Students whose first language is French are not eligible.	
ARTS	W. H. Harrison Prize for Conversational French UNBF					A prize of $200 to be awarded annually on the recommendation of the Department of French to the graduating Fredericton campus student who has shown the highest achievement in the oral skills of French. The prize has been funded by the estate of the late W.H. Harrison. Students whose first language is French are not eligible.	
ARTS	Richard B. Hatfield Prize in Political Science					The Honourable Richard B. Hatfield (1931-1991), Premier of the Province of New Brunswick from 1970 to 1987, established an endowment fund, the proceeds of which are to be used for awarding annually the Richard B. Hatfield Prize in Political Science to the graduating student who obtains the highest average in the courses required for the Majors or Honours programs in Political Science. The prize is awarded on the recommendation of the Department of Political Science. The recipient must have achieved at least second class standing and may not be a double majors candidate for a degree.	
MANAGEMENT	Paul Hazlehurst Memorial Prize					A prize of $110 to be awarded annually on the recommendation of the Faculty of Management, to a student entering the second year of the Bachelor of Business Administration degree program on the Fredericton campus. This award will be made to an outstanding student who, at the end of the regular academic year in which he or she completes 30 ch, has achieved the highest sessional grade point average. This prize has been funded by the friends of the late Paul Edward Hazlehurst.	

FORESTRY	Jason Herron Memorial Award					A prize with a minimum value of $1,500 to be awarded annually to a student in good academic standing who has completed at least 90 credit hours in the Bachelor of Forest Engineering or Bachelor of Forestry degree program on the Fredericton campus. The recipient must have demonstrated professionalism, commitment to fellow students, and academic leadership. Nominations from students, staff and faculty will be received by the Faculty Scholarship committee. This award is funded by family, friends and colleagues of Jason Herron, Forest Manager for Georgia-Pacific in New Brunswick for many years, and a UNB lecturer, 2000-03.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. Sandee Hicks-Moore Prize in Gerontological Nursing					A $250 prize awarded annually on the recommendation of the Department of Nursing and Health Sciences to a Saint John campus student graduating from the Bachelor of Nursing degree program, who has demonstrated excellence in practice of Gerontological Nursing. The prize is in memory of Dr. Sandee Hicks-Moore, a Faculty member within the Department of Nursing and Health Sciences. The prize is funded by Alzheimer's Society, colleagues, friends and family of Dr. Sandee Hicks-Moore.	
UNRESTRICTED	Barry Hoyt Student Leadership Award					An award of $1,500 and a plaque or certificate is awarded annually on the recommendation of the Leadership Award Committee to a full-time Saint John campus student who has made an outstanding contribution to student life and school spirit. The recipient has completed a minimum of one year (a minimum of 24 ch) of his or her degree on the Saint John campus; must be in good academic standing (min. 2.5 cumulative GPA); and has demonstrated outstanding leadership in student activities and/or university activities. These activities could include but not be limited to: orientation, peer mentoring and student government. This award is funded by friends and family of Barry Hoyt, the UNB Saint John Student Union and the Class of 2002.	
FORESTRY	Peter J. Hughes Sustainable Forestry Award					Awarded on the recommendation of the Faculty of Forestry and Environmental Management to a full time student on the Fredericton campus in the Faculty of Forestry and Environmental Management after the completion of at least 60 ch in the BScF or BScFE degree program. The recipient must have demonstrated a commitment to sustainable forestry practices. Preference will be given to students from Atlantic Canada who have been involved in private woodlot management. The award has been funded by family, friends and business associates in memory of the late Peter J. Hughes who was a long-time employee of the NB Federation of Woodlot Owners.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. Gustavus Huige Prize					A prize of $400 to be awarded annually on the recommendation of the Department of Mathematics and Statistics to a student on the Saint John campus who has demonstrated excellence in mathematics and has completed at least 9 credit hours of upper level mathematics courses. Preference will be given to a student who has completed Math 3093. The prize has been funded by Dr. Paul C.S. Lin in honour of Dr. Gustavus Huige, Associate Professor of Mathematics at the UNB Saint John campus from 1971-1999.	

ENGINEERING	Ronald C. Hurley Award in Chemical Engineering				An award of $1,000 to be awarded annually on the recommendation of the students and faculty members of the Department of Chemical Engineering to a graduating student in the Department of Chemical Engineering. Made on the basis of scholastic attainment and participation in department, university and community activities. Donated by family members as well as students and faculty members in the Department of Chemical Engineering.	
NURSING	Margaret Burton Innes Award				An award of $250 to be awarded annually on the recommendation of the Faculty of Nursing to a full-time student enrolled in the Bachelor of Nursing Advanced Standing degree program at the Moncton site. The recipient is selected on the basis of academic ability and demonstrated excellence in nursing. The award has been funded by the family of the late Margaret Burton Innes, a graduate of the former Moncton Hospital School of Nursing.	
ARTS	Institute of Public Admin. of Saint John Branch Prize				A prize of books and money to be awarded on an annual basis to a mature or part-time Saint John campus student based on performance in Urbanization, Poverty and Politices POLS 3632. Selection of the winner will be based on the recommendation of the instructors of Economics, Political Science and Public Administration. The prize is funded by the Institute of Public Administration of Canada (Saint John Branch).	
ARTS	International Development Studies Essay Book Prize				A book to be awarded annually on the recommendation of the IDS Faculty Committee to the undergraduate student on the Fredericton campus who has written the best essay in an IDS core course. The prize is funded by the IDS program.	
ARTS	International Development Studies Honours Book Prize				A book to be awarded annually on the recommendation of the IDS Faculty Committee to the undergraduate student on the Fredericton campus who has written the best Honours thesis. The prize is funded by the IDS program.	
ARTS	IODE Provincial Chapter Prize in History UNBF				An annual prize of $100 has been donated by the Imperial Order Daughters of the Empire, Provincial Chapter, to be awarded to a Junior level (61-90 ch) Fredericton campus student with the highest standing in British and/or Commonwealth History.	
ARTS	IODE Provincial Chapter Prize in History UNBSJ				An annual prize of $100 has been donated by the Imperial Order Daughters of the Empire, Provincial Chapter, to be awarded to a Junior level (61-90 ch) Saint John campus student with the highest standing in British and/or Commonwealth History.	
ENGINEERING	Brydone Jack Prize				An annual prize of $540 donated by the Associated Alumni of the University of New Brunswick. It is to be awarded to the full time student who obtains the highest standing in the final two terms of the Electrical or Computer Engineering program.	
ENGINEERING	D. Malcolm Jeffrey Memorial Prize				The family of the late D. Malcolm Jeffrey has established a prize of $225 to be awarded annually to the Civil Engineering student who obtains the second highest standing based on the regular (full-time student) work in the final two years of the student's regular program.	
BUSINESS	R. Wayne Jollineau Prize in Business				A $3,000 prize to be awarded annually on the recommendation of the Faculty of Business, to a student graduating from the Faculty of Business on the Saint John Campus showing high academic achievement and overall contribution to campus life, in particular to the enhancement of student life in this program. The prize is named for Professor R. Wayne Jollineau, who in his 25 years on the Saint John Campus was instrumental in the	

						establishment of the four-year BBA and the Business Co-op program, as well as ensuring UNBSJ's participation in the MBA program. The prize is funded by faculty, staff, family, friends and former students of Professor Jollineau.	
ARTS	Dr. Cecil Charles Jones New Brunswick History Prize					A prize of $500 to be awarded annually to an undergraduate Fredericton campus student, on the recommendation of the Department of History, for an outstanding essay or report focusing on the founders of a New Brunswick community. This project would be completed as part of a History course requirement. Preference will be given to studies on the founders of Monckton township. This prize is funded by Les Bowser, in honour of Dr. Cecil Charles Jones. A former UNB President, Dr. Jones was a descendant of five of the Pennsylvania-German families who founded Monckton township in 1766.	
SCIENCE & SASE	Dr. C. C. Jones Prize					Two $125 prizes, one on each campus, are awarded on the recommendations of the Mathematics Departments at UNB to a student who has completed the normal requirements for the first year of the program in which he/she is registered. Awarded on the basis of the record of the student in first year at the University as follows: (1) First division standing in either Mathematics 1003/1013 or 1053/1063. (2) General standing in all other subjects of the first year. (3) The worthiness of the student. Holders of a major scholarship are ineligible. The prize is funded by the UNB Associated Alumni.	The Associated Alumni of UNB.
BUSINESS	Herbert E. Jones Accounting Prize					A prize to be awarded annually on the recommendation of the Faculty of Business to the student with the highest standing in the area of Accounting at UNB Saint John, who is in receipt of no other awards. The prize has been funded by the late Herbert E. Jones.	
BUSINESS	Liana Jones Prize in Accounting					A $500 prize to be awarded annually on the recommendation of the Faculty of Business to the Saint John campus student enrolled in the Bachelor of Business Administration who is a Canadian citizen or permanent resident with the highest standing in a first year accounting course (such as BA1216) at UNB Saint John. The prize has been funded by Liana Jones BBA 1989.	
ARTS	Dr. W. C. Keirstead Memorial Prize in Philosophy					This prize of $500 has been established by the Associated Alumni in memory of Dr. W.C. Keirstead, formerly a professor of Philosophy at the University of New Brunswick. It is awarded to a full or part-time student, who, having completed at least twenty-four credit hours in Philosophy, eighteen of which are at an advanced level, graduates with an undergraduate Bachelor's degree during the academic year of the award, and achieves the highest average of those eligible for this prize. The prize is to be awarded in alternate years to a student either on the Saint John or the Fredericton campus. The award is made on the recommendation of the Department of Philosophy and of the professors of Philosophy in the Department of Humanities and Languages.	
ARTS	Dr. W. C. Keirstead Prize in Economics					A prize of $300 to be awarded on the recommendation of the Department of Economics to the undergraduate student who has submitted the best research essay. The prize has been donated by Mr. and Mrs. James E. Porter.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Miles A. Keirstead Prize in Physics					A prize of $350 to be awarded annually on the recommendation of the Physics faculty members on the Saint John campus to an outstanding student who achieves high standing in a full-year Freshman level	

						Physics course on the Saint John campus. The prize has been funded through the University Faculty Fund.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Olive Keith Memorial Prize in Community Nursing					A prize of $500 to be awarded annually on the recommendation of the Department of Nursing and Health Sciences on the Saint John campus. The recipient must be graduating from the Bachelor of Nursing degree program and have demonstrated outstanding interest and ability in theory and practice coursework focused on community as client. The prize has been funded by colleagues, family and friends of the late Olive Keith who practiced community nursing in Saint John and who taught the first nursing course offered on the Saint John campus, a practice course in community nursing. The prize may be split. The prize will be awarded at Spring Convocation.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Leslie Kelly Memorial Prize					A prize to be awarded annually, on the recommendation of the appropriate faculty member in Chemistry, to the student who achieves the highest standing in second year Organic Chemistry at UNB Saint John. The prize has been funded by Dr. Ronald B. Kelly, Professor Emeritus of Chemistry, in memory of his late wife.	
ENGINEERING	Ketchum Memorial Medal					A silver medal to be known as the "Ketchum Medal" has been founded according to the will of the late H.G.C. Ketchum, Esq., and is to be awarded to the top graduating student in Civil Engineering based on the regular (full time student) work in the final two terms of the student's regular program.	
ARTS	Murray Kinloch Memorial Prize in Linguistics					An annual prize awarded, at the discretion of the Linguistics Committee, to a student on the Fredericton campus with a distinguished record in linguistics. It is not restricted to majors or honours students in Linguistics. The prize is funded by friends and colleagues of the late Dr. Murray Kinloch.	
ENGINEERING	Gottfried Konecny Survey Award					A $1,500 prize awarded annually on the recommendation of the Department of Geodesy and Geomatics Engineering to a student with high academic standing, creative abilities, and a constructive attitude towards the surveying profession who has completed six terms of the Geodesy and Geomatics Engineering program. Financial need will also be considered. The prize is funded by the Gottfried Konecny Survey Award Fund.	
ARTS	Doris LeBlanc Prize in French					A $150 prize to be awarded annually on the recommendation of the Department of French to a first- or second-year full-time student on the Fredericton campus whose first language is French and who has completed at least 6 credit hours of courses in French and has obtained grades of A- or above in each course. This prize was established by Doris LeBlanc, the first woman Chair of the Department of French.	
KINESIOLOGY	Amby Legere - Pete Kelly Prize					A prize of $2,000 is awarded to the student who has completed three years of the Bachelor of Recreation and Sport Studies. The award will be made to the student who has demonstrated the highest academic achievement (Cumulative Grade Point Average). The student can receive this award only once The prize is funded by Physical Education and Recreation/ Kinesiology Alumni and Supporters.	
ARTS	Angela Ludan Levine Memorial Book Prize					A book prize to be awarded annually on the recommendation of the Department of English for the most impressive creative work by a Fredericton campus graduate or undergraduate student in the English	

						Description	
						Department during the academic year. The prize has been funded by Dr. Larry Levine.	
COMPUTER SCIENCE	Edith and Harry Levine Prize in Computer Science					A prize of $200 to be awarded annually on the recommendation of the Faculty of Computer Science to a deserving student graduating in the Computer Science program. The prize has been donated by the Levine Family.	
ARTS	Thomas Allen Levy Memorial Prize					A prize of $500 is awarded annually on the recommendation of the Department of Political Science to the Fredericton campus student who has completed the normal requirements for the second or third year and has written the best paper for a Canadian Politics course. The prize is funded by the Department of Political Science.	
ARTS	Douglas & Susan Leyden Creative Writing Prize					A $500 prize awarded on the recommendation of the faculty members of the Discipline of English in the Department of Humanities and Languages to a student on the Saint John campus who shows promise in writing in any genre (i.e. creative writing or other forms of writing). The prize is funded by Douglas Leyden, BBA 1967 and Susan Leyden BA (History) 1985, BEd 1986.	
ARTS	Susan Kathleen Leyden Memorial History Prize					A prize of $1,000 to be awarded annually on the recommendation of the Department of History and Politics at UNB Saint John to a student on the Saint John campus who has attained a high academic standing in history. The prize was created to encourage further study in the field of history. The prize is funded by Mr. Douglas Leyden.	
ARTS	Gillian Liebenberg Prize					A prize of $250 to be awarded annually on the recommendation of the Department of History on the Fredericton campus to a mature female student who has demonstrated scholastic excellence in history.	
UNRESTRICTED	Lieutenant Governor of New Brunswick Silver Medal					Fourteen medals are to be awarded annually to the outstanding graduating student in each Faculty. The selection is to be made in each case by the appropriate Faculty. The medals are awarded at Encaenia on the Fredericton campus and the Spring Convocation on the Saint John campus, with the exception of the Faculty of Education medal which is awarded at Fall Convocation on the Fredericton campus. Awarded to the full-time or part-time student judged to be the most outstanding student based primarily on the last half of his/her program as decided by the Faculty in consultation with the Registrar. Students enrolled in a concurrent program are eligible to be considered for the medal in each of the degree programs so represented.	
ARTS	Linguistics Book Prize					A book prize will be awarded on the recommendation of the Coordinator of the Linguistics Program, UNB Saint John, to a Saint John campus student who demonstrates outstanding performance in linguistics courses. This award is open to all students enrolled in a linguistics program (Minor, Double Major, Joint Honours). The prize has been funded by Dr. Virginia Hill.	
ARTS	Linguistics Prize					A prize of $200 to be awarded on the recommendation of the Coordinator of the Linguistics Program, UNB Saint John, to a Saint John campus student who demonstrates a deep understanding of linguistic concepts in upper level linguistics courses. The recipient must be a continuing student enrolled in a linguistics program (Minor, Double Major or Joint Honours). The prize has been funded by Drs. Virginia and Rod Hill.	

SCIENCE	Herbert S. Lipsett Memorial Award in Biology					This award has been given by Mr. And Mrs. Nathan Liphshetz in memory of the late Herbert S. Lipsett, a graduate of UNB. This award is made annually to a student in Biology, who has demonstrated academic excellence. The amount of the award is approximately $250.	
SCIENCE	Derek L. Livesey Memorial Prize in Physics					A prize of a minimum of $2,000 to be awarded annually on the recommendation of the Department of Physics to an outstanding Science student on the Fredericton campus who achieves high standing in first year physics. The prize has been funded by the family of the late Derek L. Livesey, a former UNB Physics Professor and Department Chair, who extensively developed first year instruction during his time in the department.	
ENGINEERING	Duane Logan Award					An award to be made annually on the recommendation of the Department of Chemical Engineering to the Chemical Engineering student on the Fredericton Campus who is entering fourth year in the program, and who in the opinion of the Department best demonstrates the qualities of tenacity and fellowship. The award has been funded by the Chemical Engineering Class of 1966 in memory of their fellow classmate, Duane Logan.	
ENGINEERING	Purves Loggie Prize					A $250 prize awarded annually on the recommendation of the Department of Geodesy and Geomatics Engineering to the student having the highest standing in the introductory surveying course. The prize is funded by the family of the late Mr. Purves Loggie	Family of the late Mr. Purves Loggie.
NURSING	Elsie Dianne Younker Longley Memorial Prize					A $400 prize awarded annually on the recommendation of the Faculty of Nursing to a Fredericton campus student who best demonstrates leadership in the area of maternal child nursing. The prize is funded by the family and friends of Elsie Dianne Younker Longley, BN 1986.	
ENGINEERING	David & Joan Lynch Chemical Engineering Sr. Design Award					A prize of $1,000 to be awarded annually on the recommendation of the Department of Chemical Engineering to the best undergraduate student or undergraduate student group final report in the senior design course. The prize has been donated by Dr. David T. Lynch (BScEngCHE 1977) and Mrs. Joan Lynch.	
UNRESTRICTED	Mary Louise Lynch Prize in Memory of Annie McGuiggan					A prize of $500 to be awarded annually on the recommendation of the Registrar to a graduate of St. Vincent's High School or St. Malachy's High School, with preference given to the St. Vincent's graduate, who has the highest standing after completing the first and second years of full-time study at the Saint John Campus of the University of New Brunswick. The prize has been funded by Miss Mary Louise Lynch, a long-time member of the Board of Governors of the University, in honour of her former teacher at St. Vincent's, who was an inspiring teacher over her many years of distinguished service.	
BUSINESS	Mary Louise Lynch Prize in Memory of Harriet L. Irving					A prize of $500 to be awarded annually on the recommendation of the Faculty of Business at UNBSJ to the student in Business Administration who has attained the highest grade point average in a minimum of 30 ch at the second year level. The prize has been funded by Miss Mary Louise Lynch.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Prize in Memory of Ellen J. and M. Josephine Lynch					A prize of $500 to be awarded annually on the recommendation of the Biology faculty members to the graduating student with the highest standing in a Biology program at UNBSJ. Preference will be given to a student in the Marine Biology option. The prize has been funded by Miss Mary Louise Lynch, a long-time member of the	

						Board of Governors of the University, in honour of her aunts.	
ARTS	Prize in Memory of Mary Louise & Francis J. Lynch					A prize of $500 to be awarded annually on the recommendation of the Department of History and Politics in consultation with the History faculty members to the student with the highest standing in introductory Canadian History on the Saint John Campus. The prize has been funded by Miss Mary Louise Lynch, a long-time member of the Board of Governors of the University, in honour of her parents.	
SCIENCE	M.D.B. Burt Prize in Parasitology					A $350 prize to be awarded annually to the graduating student on the Fredericton campus who has the highest overall standing in parasitology courses completed as part of their Bachelor of Science (Biology) degree program. This prize is funded by Andy S. Didyk.	
ARTS	John D. MacCallum Memorial Prize					A prize with a minimum of $300 awarded to the student on the Saint John campus who attains the highest grade in a course involving Municipal Government (at least A-). Courses to be considered in descending order of priority are Provincial and Municipal relations, the Government of Metropolitan Areas, and Canadian Municipal Government. If none of these courses is offered in any given year, the prize would be awarded for a course closely related to one of these. Funded by friends of the late John D. MacCallum.	
MANAGEMENT	Duncan MacDonald Venture Analyst Award					One or more prizes valued at a minimum of $2,000 each will be awarded annually on the recommendation of the Faculty of Management in conjunction with the Professor of the Venture Assessment course and program coordinator, to outstanding students who have completed the Assessment course and exceeded the course requirements. The recipients must demonstrate due diligence, balanced and concise summations, and provide strategic feedback within their assessments and contribute to the annual report of the Fraser Student Venture Fund. The prize has been donated by Duncan L. MacDonald (BBA 1968).	
ENGINEERING	Ian Scott MacDonald Prize					A prize of $800 is awarded each term to the student enrolled in Bachelor of Science in Engineering (Civil Engineering) degree program on the Fredericton campus who has submitted the Senior Report which is judged to be best in terms of creativity in design. Selection is made by a panel of judges consisting of faculty members within the Department of Civil Engineering. The prize is funded by an endowment established by the late Ira M. Beattie.	
ARTS	William Stuart MacFarlane Prize					Two prizes of up to $5,000 to be awarded annually to a student or students entering their graduating year on the Fredericton campus who, in the opinion of the Department of Classics and Ancient History is/are the best classical scholar/scholars in Latin and Greek. The prize is funded by Mrs. Annie Macfarlane Logan.	Mrs. Annie Macfarlane Logan.
ARTS	Neil MacGill Prize in Business Ethics					A prize of $750 to be awarded on the recommendation of the Department of Philosophy (UNBF) to a student with the highest standing (at least A-) in the Philosophy Department's introductory course in Business Ethics. One prize is to be awarded in each of the fall and winter terms when the course is offered. The prize has been funded by friends and colleagues of Professor Neil MacGill.	

KINESIOLOGY	Bill MacGillivary Prize					A prize of $1,000 is awarded annually to the student who has completed 2 years of the Bachelor of Science of Kinesiology Program. The award will be made to the student who has demonstrated the highest academic achievement (Cumulative Grade Point Average). The student can receive this award only once. The prize is funded by Physical Education and Recreation/ Kinesiology Alumni and Supporters.	
NURSING	Dr. Katherine MacLaggan Memorial Prize					A $2,000 prize awarded annually on the recommendation of the Faculty of Nursing to the student obtaining a high academic average in their third year of the Bachelor of Nursing degree program with demonstrated excellence in nursing practice and who is enrolling in their fourth year of full-time study. The prize is funded by friends of the late Dr. Katherine MacLaggan.	
EDUCATION	Fred Magee Prize in Technology Education					A prize of approximately $1,000 to be awarded annually, on the recommendation of the Faculty of Education, to a graduating student in the Faculty of Education, who has demonstrated academic excellence, qualities of leadership, and professional promise in technology, science or mathematics education. The prize is funded by the Fred Magee endowment fund to the NB Department of Education.	
ARTS	Fred Magee Prize (UNBF)					Two annual prizes of $750 each established by the late Dr. Fred Magee. One prize to be awarded in each of the Freshman (1-30 ch) and Junior (61-90 ch) levels, to a Fredericton campus student who is not of French origin, whose work in both conversational and written French is, in the opinion of the Department of French, most satisfactory.	
ARTS	Fred Magee Prize (UNBSJ)					An annual prize of $750 each established by the late Dr. Fred Magee to be awarded at the Sophomore (31-60 ch) level, to a Saint John campus student who is not of French origin, whose work in both conversational and written French is, in the opinion of the French Section, Department of Humanities and Languages, most satisfactory.	
MANAGEMENT	E. D. Maher Prize					A prize of $400 to be awarded annually to a full-time student enrolled in the penultimate year of the undergraduate Business Administration program on the Fredericton campus. (The recipient must have successfully completed a minimum of 60 ch toward the BBA degree.) The award is made to the student who attained the highest grade point average in the business courses required in the first 60 ch of the business program. The prize has been funded by graduates, faculty, staff, organizations, and friends in recognition of E.D. Maher's many contributions to the University community and, in particular, to the undergraduate business program.	
ARTS	Malleson Prize in Imperial & Commonwealth Military History					A $300 prize will be awarded annually on the recommendation of the History department to an honours or majors student in History on the Fredericton campus for the best essay in military history with particular emphasis on the role of imperial and/or Commonwealth military forces for the period commencing with the 20th century. This will encompass the Boer War, the World Wars, the Korean War, peacekeeping missions, and post-Cold War conflicts and operations.	

ARTS	Henry J. Marquis Prize					A prize of $250 to be awarded annually on the recommendation of the Faculty of Arts to a graduating Saint John campus student who achieves high standing in a designated course in the area of law or legal studies. The prize is funded by the family and friends of the late Henry J. Marquis, Q.C. (BCL '54).	
ARTS	Marshall D'Avray Prize in English Literature					This prize of $500 was made available through a legacy of the late Joseph Whitman Bailey of the class of 1884 to provide a prize in English Literature in memory of his grandfather, Joseph Marshall d'Avray, sometime Professor of Modern Languages at UNB 1848-1872. The prize is to be awarded annually to an undergraduate student in one of the regular courses of the Junior level (61-90 ch) who has shown the most promise in the subject of English Literature. The award is made on the recommendation of the Chair of the Department of English.	
ARTS	Chester Martin Prize in History					A prize of $200 to be awarded annually on the recommendation of the Department of History, to a student entering the History majors or honours program on the Fredericton campus of the University of New Brunswick who, during the first 60 ch, achieves a high average grade in twelve to eighteen credit hours in History, and an overall grade point average of at least 3.50. The prize was named by Dr. Alfred G. Bailey in memory of Chester Martin, a graduate of the University of New Brunswick and Canada's first Rhodes Scholar, who was for many years Head of the History Department at the University of Toronto.	
ARTS	W. A. G. McAndrew Prize					An annual prize in honour of the late Dr. W.A.G. McAndrew, professor of French and Head of the Department of Romance Languages, to be awarded to the student on the Fredericton campus whom the Department of French considers to have done the most satisfactory work in two courses (six ch) at the sophomore level (31 - 60 ch) in French as a second language. The prize has been sponsored by the French Department.	
ARTS	Peter McGahan Prize in Sociology					A prize of $400 to be awarded annually to a student on the Saint John campus who has completed an honors program in Sociology and has produced the best honours thesis as deemed by the faculty members of the Department of Social Science at UNBSJ. The prize is funded by Elizabeth McGahan.	
ENGINEERING	R.H.B. McLaughlin Prize in Civil Engineering					A prize of $750 to be awarded to the graduating student who has obtained the highest average in the courses in building and construction offered by the Department of Civil Engineering. Only those who have successfully completed 75 per cent of the electives in the designated areas will be eligible. Donor: Prof. R.H.B. McLaughlin, Class of 1943.	
ENGINEERING	Dr. Alan Y. McLean Memorial Prize					A prize of $550 to be awarded annually on the recommendation of the Chair of the J. Herbert Smith/ACOA Chair in Technology Management and Entrepreneurship to the student attaining the highest grade point average within the 15 ch of the TME Diploma Program. A book to be selected by the Chair will be presented to the recipient and a copy placed in the library in the Centre. The name of the student will be placed on a plaque in the Dr. J. Herbert Smith Seminar Room.	

ARTS	Nan McLellan Memorial Prize in Art History					A prize of $100 to be awarded annually on the recommendation of the Department of Humanities and Languages based on academic performance to the best student in courses in Art History. The award commemorates a former University librarian, a well-known supporter of community and cultural activities in the greater Saint John area. The prize is being funded by friends of the late Nan McLellan.	
NURSING & SASE	Margaret McPhedran Prize					Two annual prizes of $450 each awarded to students, one on the Fredericton campus and one on the Saint John campus, enrolled full-time in the Bachelor of Nursing degree program who have obtained the highest standing in the Theory and Practice of Nursing in third year.	
ARTS	Senator Muriel McQueen Fergusson Memorial Prize in History					A prize of $350 to be awarded annually to an undergraduate Fredericton campus student, on the recommendation of the Department of History, for an outstanding essay in Women's History. This essay would be part of a History course requirement. Candidates may be enrolled in any undergraduate degree program. The prize is named in honour of the first woman Speaker of the Senate. The prize has been funded by Dr. Gillian Thompson.	
KINESIOLOGY	John Meagher Prize					A prize of $2,000 is awarded annually on the recommendation of the Faculty of Kinesiology to the student who has completed three years (at least 75%) of an undergraduate degree program in the Faculty of Kinesiology and who intends to pursue a Bachelor of Education degree. The award will be made to the student who has demonstrated the highest academic achievement (Cumulative Grade Point Average). The student can receive this award only once. The prize is funded by Physical Education and Recreation/ Kinesiology Alumni and Supporters.	
SCIENCE	Shuyuan Meng Prize					A $1,000 prize awarded annually on the recommendation of the Faculty of Science to a Fredericton campus student who is graduating from the Bachelor of Science degree program and has been accepted to Medical School. Selection is based on scholastic attainment and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Proof of acceptance to Medical School must be received by the Faculty of Science before April 25. The prize is funded by friends and family of the late Shuyuan Meng and the New Brunswick University Opportunities Fund.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Microbiology Prize UNBSJ					A prize of $200 to be awarded to a Saint John campus student who achieves high standing in BIOL 2485 Introduction to Microbiology. The prize is funded by the Saint John Laboratory Services.	
ARTS	H.H. (Mike) Mikaelian Memorial Prize					A $500 prize to be awarded to a Fredericton campus undergraduate research student in Psychology. The recipient must be in good academic standing, have intentions of pursuing a career in Psychology, be involved in research activities and actively demonstrate curiosity, commitment, and passion for the search of knowledge and understanding in the field of Psychology. The prize is funded by the family, friends and colleagues of the late Dr. H.H. (Mike) Mikaelian.	

149

ARTS	Muriel Miller Award in Creative Writing					A medal and a monetary award to be awarded annually on the recommendation of the Department of English to the most promising undergraduate student on the Fredericton campus in the Department of English in its Creative Writing Program. Preference will be given to residents of Atlantic Canada. The award has been established by Michael and Brian Miner in memory of their mother, the late Muriel Miller, a New Brunswick born creative writer who wrote Bliss Carman's biography, and was a graduate of UNB in English.	
ARTS	Miramichi Historians' Prize in New Brunswick History					A $1,500 prize awarded annually on the recommendation of the Department of History to a Fredericton campus undergraduate student who submitted an outstanding essay or report on New Brunswick history or biography to satisfy a regular course requirement. Preference will be given to studies done on Miramichi or Northumberland County topics. In the event that no qualifying essay or report on such topics is submitted in a given year, the award will be granted for superior achievement in similar work for a course on New Brunswick, Atlantic, or Canadian history. This prize is funded by Professor Emeritus Willis D. Hamilton, author of the Dictionary of Miramichi Biography and other works, in honour of Robert Cooney, Louise Manny, W. Harold Davidson, James A. Fraser and others whose writings have helped preserve Miramichi and provincial history.	
ARTS	Montgomery - Campbell Prize					This prize was awarded for the first time to the Graduating Class of 1880 and has been offered annually since in memory of George Montgomery-Campbell, sometime Fellow of Magdalene College, Cambridge and Professor of Classics in UNB from 1861 until his death in 1871. Through the generosity of the Executors of the Estates of Colonel Henry Montgomery-Campbell and General Herbert Montgomery-Campbell, a trust fund has been established to provide for this prize in perpetuity. This prize has an annual value of up to $2,000 and will be awarded to a student or students on the Fredericton campus in the following order of priority: 1) to a student for Junior level (61-90 ch) Latin and Greek or for Junior level Latin only, if there are no eligible students in Greek; 2) to the best qualified student in the Classics Department registered as an Honours or Majors student in Classics; 3) to any other Junior or Senior level student taking courses in the Department of Classics; 4) to the student with the highest standing in the penultimate year of a Bachelor's degree program, regardless of Faculty.	
ENGINEERING	John F. Murphy Prize in Electrical & Computer Engineering					Two $1,000 prizes to be awarded annually on the recommendation of the Department of Electrical and Computer Engineering to a group of students in the Electrical, Computer or Software Engineering programs on the Fredericton campus whose senior undergraduate project best displays outstanding technical merit. One prize will be awarded to students in any concentration and one prize will be given to a student(s) in the power and renewable energy concentration. The prize has been funded by friends of John Murphy, an Electronics Technologist who served the University with distinction for 26 years, 1968-1994.	

KINESIOLOGY	Anne Murray Prize					A prize of $2,000 is awarded to the student who has completed three years of the Bachelor of Science in Kinesiology Program. The award will be made to the student who has demonstrated the highest academic achievement (Cumulative Grade Point Average). The student can receive this award only once. Donor: Physical Education and Recreation/ Kinesiology Alumni and Supporters.	
BUSINESS	William B. Nase Memorial Prize					A $500 prize awarded annually on the recommendation of the Faculty of Business Co-op Program and the Work Term Report Evaluator to a Saint John campus student enrolled in the Business Co-op program who achieves the highest standing on the Co-op work term report. The prize is funded by family, friends and colleagues of the late William B. Nase.	
ARTS	Nancy Nason-Clark Essay Prize					A prize of $200 to be awarded annually on the recommendation of the Muriel McQueen Fergusson Centre for Family Violence Research to a continuing or graduating student who has written an outstanding undergraduate essay on family violence issues at UNB in the previous academic year in any discipline. The prize is jointly funded by the Muriel McQueen Fergusson Centre for Family Violence Research and the Muriel McQueen Fergusson Foundation.	
ARTS	Nathan Alberts Memorial Prize					An award of at least $250 to be awarded annually on the recommendation of the Department of Philosophy to a third year Fredericton campus student having taken at least 24 credit hours in Philosophy, judged to combine academic excellence with significant contribution to the life of the Philosophy Department. The prize is funded by friends of the late Nathan Alberts.	
NURSING & SASE	New Brunswick Nurses' Union Prize					Eight prizes of $800 each to be awarded annually on the recommendation of graduating Nursing students, to graduating Nursing students exemplifying high academic standards, leadership skills, involvement in extracurricular activities, and commitment to enhancing the interests and status of classmates. Two prizes will be awarded to each of the four UNB nursing sites. The prize has been provided by NBNU and will be presented at the Pin Dinner for Nursing graduates.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Organic Chemistry Prize UNBSJ					A prize of $200 to be awarded to a Saint John campus student who achieves high standing in CHEM 2401/2422 (Organic Chemistry I & II). The prize is funded by Saint John Laboratory Services Ltd.	
ENGINEERING	Sasi Mohan Pal Prize					A prize of approximately $200 to be awarded annually on the recommendation of the Department of Chemical Engineering to a Fredericton campus visa student, who achieves the highest standing at the completion of second or third year of the Chemical Engineering degree program at UNB (minimum 80 ch). The prize has been funded by Mrs. Purabi Pal in memory of her husband, Sasi Mohan Pal, a graduate of UNB.	
ARTS	Dean D. Kermode Parr Prize in English UNBSJ					A prize of at least $1,000 to be awarded annually, on the recommendation of the Division Department of Humanities and Languages to an outstanding Saint John campus student who achieves high standing in fourth year English. This prize recognizes the contributions of D. Kermode Parr, a published author and former dean of the University of New Brunswick's Alexander College, the home to many WWII veterans pursuing a UNB education. This prize is funded by Dr. Frank E. Webb (BSF 1949).	

ARTS	Dean D. Kermode Parr Prize in English UNBF					A prize of at least $1,000 to be awarded annually, on the recommendation of the English Department to an outstanding Fredericton campus student who achieves high standing in fourth year English. This prize recognizes the contributions of D. Kermode Parr, a published author and former dean of the University of New Brunswick's Alexander College, the home to many WWII veterans pursuing a UNB education. This prize is funded by Dr. Frank E. Webb (BSF 1949).	
RENAISSANCE COLLEGE	James Pataki Memorial Award					A $500 prize awarded annually to a student who has just completed the requirements for the first year of the Bachelor of Philosophy degree program and has developed and demonstrated his/her interest in musical or visual arts with plans to improve, promote and/or pursue their chosen artistic endeavors. The prize is funded by the family and friends of the late James Pataki.	
ARTS	Barbara Pepperdene Prize for Substantive Inquiry					An annual prize of $750 to be awarded in the Fall on the recommendation of the Department of Sociology to a continuing student on the Fredericton campus for an outstanding assignment from the previous academic year which examines issues central to the strengths in the Department. The prize is funded by Dr. Barbara Pepperdene.	
ARTS	Barbara Pepperdene Essay Prize					An annual prize of $750 to be awarded at Encaenia on the recommendation of the Department of Sociology to any graduating student on the Fredericton campus for an outstanding essay in any Sociology course. The prize is funded by Dr. Barbara Pepperdene.	
ENGINEERING	Samuel Leonard Peters Prize					The late Miss Marianne Grey Otty has bequeathed $900 to UNB, the income therefrom to be used to establish a prize in memory of Flying Officer S. Leonard Peters, of Queenstown, N.B., who was killed in action, August 1944, while serving with the RCAF over France. The prize will be awarded to the student who has the highest standing in the first year of the Mechanical Engineering program.	
EDUCATION	Ingrid J. Peterson Memorial Prize					A prize of $100 to be awarded annually on the recommendation of the Faculty of Education, to the graduating student specializing in English of Literacy, who has maintained the highest grade point average. Funded by friends of the late Ingrid J. Peterson.	
ARTS	Political Science Book Prize					A book prize to be awarded annually on the recommendation of the Department of History and Politics (Politics Discipline) to a graduating student on the Saint John campus who has shown a high level of achievement and interest in the area of Political Science. The prize is funded by the Politics Discipline of the Department of History and Politics.	
ARTS	Politics Class of 1995 Prize					A prize of $250 to be awarded annually on the recommendation of faculty in the discipline to an outstanding student in Politics on the Saint John campus who has completed 60 credit hours in the B.A. program. This prize is funded from the proceeds of the sales of "Rebuilding National Political Parties" (1997), a book published by Prof. Don Desserud's senior students.	
ENGINEERING	Mannarkoil A Gopala Iyengar Ponnuammal Memorial Prize					A prize of $500 to be awarded annually on the recommendation of the Department of Civil Engineering to the winning entry of the UNB Popsicle Stick Bridge Building Competition. The prize has been donated by Dr. Gopalan Srinivasan.	

SCIENCE	Prize in Actuarial Science					A prize of $300 to be awarded annually on the recommendation of the Department of Mathematics and Statistics to a Fredericton campus student who has passed at least one examination given by the Society of Actuaries and is taking appropriate courses. Students should have demonstrated a continuing interest in actuarial science. The prize has been funded in part by a grant from the Society of Actuaries.	
ARTS	Prize in Classical Sociological Theory					A $250 prize to be awarded annually on the recommendation of the Department of Social Sciences to a student on the Saint John campus who is pursuing a major or honours in Sociology. Preference will be given to the student who has achieved the highest grade Classical Sociological Theory, or its equivalent. The prize has been funded by Janet M.C. Burns.	
ARTS	Douglas R. Pullman Prize in Sociology					A prize has been established in honour of the contribution of Douglas R. Pullman to the development of Sociology at UNB. It will be awarded annually on the recommendation of the Department of Sociology to the graduating student on the Fredericton campus with a Major in Sociology. The award would be made on the discretion of the Department of Sociology. The prize has been established by colleagues of Dr. Douglas Pullman.	
UNRESTRICTED	Recreation Leadership Award					At least one award of $500 to be awarded annually on the recommendation of the UNB Director of Recreation Services to a Fredericton campus student who has made an outstanding contribution to student life though improving and/or aiding in the development of university recreation programming. The recipient must have completed at least the minimum requirements for the first year of an undergraduate degree and be in good academic standing. The award is funded by supporters of URec.	
ARTS	Jamie Reid Prize for History of the Military in New Brunswick					A $300 prize to be awarded annually, on the recommendation of the Department of History, to an undergraduate or graduate student for the best essay on the history of the military in New Brunswick written by a student on the Fredericton campus. The prize has been established by Major Jamie Reid of the Princess Patricia's Canadian Light Infantry.	
ARTS	Tom Riesterer Memorial Prize					A prize of at least $200 to be awarded annually on the recommendation of the Department of English to the student who has written the best undergraduate or graduate essay for the Fredericton campus UNB English Department. The prize has been funded by the family of Tom Riesterer.	
SCIENCE	Dr. Stefan Rinco Memorial Prize in Statistics					A prize of approximately $1,000 dedicated to the memory of Stefan Rinco, Professor of Statistics at UNB, 1974-87. The prize is to be awarded annually on the recommendation of the Department of Mathematics and Statistics, to a Fredericton campus student who has excelled in statistics courses and is on the Dean's List. The student must have completed a minimum of 12 ch of upper-level statistics courses. In the event that no undergraduate student is eligible for this prize, graduate students may be considered. The prize is being funded by the family, friends and colleagues of the late Dr. Stefan Rinco.	
ARTS	Wendy J. Robbins Prize in Gender and Women's Studies					A prize of $1,000 to be awarded annually on the recommendation of the Coordinator of Gender and Women's Studies Program to a student enrolled in the Bachelor of Arts degree program on the Fredericton	

						campus who has completed one of the required introductory courses in Gender and Women's Studies and is entering into their second year of full or part-time study. The recipient should demonstrate interest in Gender and Women's Studies and in advancing the rights and representation of underrepresented groups and have a minimum grade point average of 3.0. The prize is funded by the Wendy J. Robbins Empowerment Fund, created to honour the memory of a co-founder of the Women's Studies program at UNB.	
ARTS	Sir Charles G. D. Roberts Memorial Prize					An annual prize of $400 to be awarded for the best short story submitted by an undergraduate. The stories are to be submitted to the Chair of the Department of English.	
ARTS	Eunice White Robertson Memorial Prize					A $1,500 prize awarded annually to a female student who has made a careful investigation of some subject of local history of the Province of New Brunswick selected by the Department of History of the University, and has submitted a competent essay thereon, and has obtained a high standing in the History courses of the Junior level (61-90 ch) at the University. The essay is to be the principal criterion of the award, although the student's class standing will also be considered. In the event that there are two qualified candidates, the prize may be divided equally between them. This prize is funded by Mrs. Phoebe W. R. Keiffer.	Mrs. Phoebe W.R. Keiffer.
ARTS	Robert Fulton Ross Memorial Prize in Anthropology					A prize of $90 to be awarded annually on the recommendation of the Faculty of Arts to a graduating Fredericton campus student enrolled in a major or honours program in Anthropology who has submitted the best essay in Anthropology. The prize was donated by Mrs. Ann Hanley class of 1896, in memory of her father.	
ARTS	Saint George Prize					An annual prize of $180, donated by the late Ellen F.P. Peake, to be awarded each year by the English Department for the highest standing in Sophomore level (31-60 ch) English.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Saint John Computer Science Prize					A prize of $200 to be awarded annually on the recommendation of the Department of Computer Science and Applied Statistics to a Saint John campus student enrolled in the Bachelor of Information Sciences or Bachelor of Science in Computer Science degree who has completed at least 60 credit hours of required courses and has demonstrated superior academic achievement in computer-related and statistics courses. The prize is funded by the members and staff of the Department of CSAS.	
BUSINESS	Saint John IG Wealth Prizes					Two prizes valued at $500 each will be awarded to Saint John campus students as follows: A $500 prize to the student with the highest academic standing in BA3421 (Personal Financial Planning) and a $500 prize to the student who has achieved the highest academic standing in BA4437 (Investment Analysis and Portfolio Management). If these courses are not offered in a particular year the prizes would be awarded to the student with the highest academic standing in BA 3426 (Corporate Finance) and ECON 3114 (International Financial Institutions and Markets).These prizes have been funded by Saint John IG Wealth.	

ARTS	Sainz Family Spanish Award					An award of $125 to be made annually on the recommendation of the Department of Culture and Media Studies to an outstanding student entering the Senior level (approximately 90 ch) completing a concentration in Spanish. Recipient must be a Canadian citizen or permanent resident. The award has been donated by the Sainz Family.	
ARTS	Irma Sainz and Marcia Koven Prize					A prize of $60 to be awarded annually on the recommendation of the Sociology discipline UNB Saint John to a mature student majoring or honouring in Sociology entering the final year at UNBSJ. Funded by Irma Sainz and Marcia Koven.	
ARTS	Dr. Elizabeth Sass Memorial Prize in History & Politics					A $400 prize to be awarded annually on the recommendation of the Department of History & Politics, to a graduating student in the Faculty of Arts on the Saint John campus who is majoring in Political Science with the highest standing in Political Science courses. Preference will be given to a female student. The prize is named in memory of Dr. Elizabeth Sass, a professor of Political Science at UNB Saint John from 1972-1976. The prize is funded by the estate of Dr. Elizabeth Sass.	
SCIENCE	Science Atlantic-CIC Chemistry Conference (ChemCon) Award					A $100 award is provided on the recommendation of the Chair of the Chemistry Department to each undergraduate student presenting at the Science Atlantic - CIC Chemistry Conference (ChemCon). The prize is funded by Dr. James P.K. Tong.	
ENGINEERING	R. Gordon Scott Electrical and Computer Engineering Prize					A $1,000 prize to be awarded annually on the recommendation of the Department of Electrical and Computer Engineering to an outstanding graduating student who combines high academic achievement with demonstrated leadership in non-academic activities, whether within the university community or beyond. The prize was established by Richard J. Scott, QC, FEC (Hon), BBA 1974, LLB 1976, in memory of his father, R. Gordon Scott, P.Eng., BScEE 1949.	
EDUCATION	Roberta M. Scott Prize					A $1,000 prize to be awarded annually on the recommendation of the Faculty of Education to an outstanding graduating student who combines high academic achievement with demonstrated leadership in non-academic activities, whether within the university community or beyond. The prize was established by Richard J. Scott, QC, FEC (Hon), BBA 1974, LLB 1976, in memory of his mother, Roberta M. Scott, BA, BT.	
FORESTRY	Dr. L. P. Sebastian Prize					Awarded annually based on the recommendation of the Faculty of Forestry and Environmental Management to an outstanding full-time student in the Faculty of Forestry and Environmental Management on the Fredericton campus who displays excellence in wood technology, wood products or wood engineering upon entering the final year of the Forestry program (approximately 140 ch completed) or the Forest Engineering degree program (approximately 163 ch completed). The prize has been funded by G. and M. Daugharty with matching funds from Northern Telecom, and friends of L.P. Sebastian.	

EDUCATION	Second Language Research Institute Prize					Two prizes of $200 each to be awarded annually on the recommendation of the Second Language Research Institute of the Faculty of Education to two graduating students on the Fredericton campus who have demonstrated outstanding ability in the field of English Second Language (ESL) or French Second Language (FSL) Education. The recipients will have attained a high overall academic standard, will have excelled in second language courses, and will have completed a successful practicum in a FSL or ESL context. The prizes are funded by the Second Language Research Institute.	
ENGINEERING	Louis R. Seheult Prize					A prize of $1,500 to be awarded annually on the recommendation of the Department of Civil Engineering to a UNB student who is a Canadian high school graduate and, upon the completion of the penultimate year of the Bachelor of Science in Engineering, exhibits: academic excellence, qualities of leadership, managerial potential, and a demonstrated understanding of the interactions of finance, human resources and technology required for a prominent role in the design, and/or construction of quality Canadian infrastructure. The prize will not be awarded to a student who is the current beneficiary of a prize or scholarship with an annual value exceeding $2,000 dollars. The prize has been funded by family and friends of the late Professor Louis R. Seheult.	
EDUCATION	Anne & Allen Selby Prize for the Performing Arts					A prize of variable value (minimum $1,000) to be awarded annually on the recommendation of the Faculty of Education to a Fredericton campus student in the Bachelor of Education program, who demonstrates outstanding achievement in the study and presentation of one of the categories of written, movement, spoken, musical and dramatic arts. This prize is funded by Anne and Allen Selby.	
EDUCATION	Agnes Nevers Shaw Memorial Award					An annual prize of $250 established by Mr. Wendell B. Shaw to be given to an undergraduate student in the Faculty of Education for the best essay on the Magna Carta.	
ARTS	Alvin J. Shaw Prize in Spanish					A prize of $500 to be awarded annually on the recommendation of the Department of Culture and Media Studies to an outstanding student on the Fredericton campus who achieves high standing in Spanish and who has completed a minimum of 24 ch in that discipline. The prize has been funded by the late Professor Alvin J. Shaw.	
ARTS	Alvin J. Shaw Prize in Theatre Arts					A prize of $600 to be awarded annually on the recommendation of the Arts Council Committee on Scholarships and Prizes, to an outstanding student on the Fredericton campus entering the penultimate or final year of a Bachelor of Arts program leading to a major in English (Drama) or a Major in English with a Minor in Drama. The prize has been funded by the late Professor Alvin J. Shaw.	
EDUCATION	Lorne Joseph Simon Prize					A prize of $1,750 to be awarded annually to an outstanding full-time Fredericton campus First Nations student, with preference given to a promising writer. The prize will be awarded on the recommendation of the Faculty of Education (Mi'kmaq-Wolastoqey Institute) in consultation (where appropriate) with the Prize Committee of the Department of English. The prize has been funded by family and friends of the late Lorne Joseph Simon, an outstanding student in the Faculty of Education, and an accomplished writer.	

ARTS	James Simonds Prize in History					Sir Charters J. Simonds of London, England, has given to the University an amount to yield an annual income of $575, to establish "The James Simonds Prize in History", in honour of James Simonds, one of the original English settlers at the mouth of the Saint John River. The prize is awarded for the outstanding essay on any historical subject.	
BUSINESS	Dr. Anthony Smith Memorial Prize					A $500 prize to be awarded annually on the recommendation of the Faculty of Business to a Saint John campus student who has the highest grade in Introduction to Industrial Relations course (BA3813). The prize is funded by family and friends in memory of Dr. Anthony Smith who taught at UNB Saint John (1991-1993) and UNB Fredericton (1994 to 1998).	
ARTS	Dr. Leonard Campbell Smith Mem. Prize for Ancient History					This prize is established in memory of the late Dr. L.C. Smith, Professor Emeritus of Classics and Ancient History, to be awarded annually to the student on the Fredericton campus with the highest standing in any 12 ch in ancient history and historiography, and classical archaeology. The award will be made on recommendation of the Department of Classics and Ancient History. It is funded by friends and colleagues of the late Dr. Smith.	
ARTS	Snodgrass Best Honours Conference Presentation Award					A committee struck by the Chair, in collaboration with the Coordinator of the Honours Program in Psychology, will recommend one $300 award to be conferred on the student who delivers the most outstanding presentation at the Honours Conference in Psychology held once per year on the Fredericton campus at the end of the winter semester. To be eligible for the award, students must have completed a research project to meet the requirements of the Honours degree in Psychology. The award is based on the scholarly merit of the presentation and on the effectiveness, organization, and visual impact of the presentation. The prize is funded by the Snodgrass Fund and commemorates the contributions of Dr. Florence Snodgrass. (BA 1924).	
ARTS	Snodgrass Honours Prize in Psychology					A prize of $700 is awarded on the recommendation of the Department of Psychology to the honours Psychology student on the Fredericton campus entering final year in the Honours Program with the highest standing in Psychology courses (minimum 24 ch). Part-time students are eligible.	
ARTS	Snodgrass Student Travel Awards					Open to Fredericton campus students with Honours in Psychology who are the first authors of a paper or poster presented at a peer-refereed psychological conference. A committee struck by the Chair of the Department of Psychology will recommend one or more awards to support travel to present an outstanding paper or poster at a national or international conference. The paper or poster must be judged, on the basis of a submitted abstract, to be of strong scholarly merit in terms of innovation, rigor, and potential to make a contribution to the discipline. Students are only eligible to receive one travel award during each academic year. Students must apply prior to attending the conference and must submit the abstract as well as written confirmation that the paper or poster has been accepted with their application.	Snodgrass Fund to commemorate the contributions of Dr. Florence Snodgrass (BA 1924).

ARTS	Dr. Florence Snodgrass Essay Prizes					Two prizes of $300 each to be awarded annually to Fredericton campus students for an outstanding essay submitted in 3000/4000-level Psychology courses. Selection will be based on the quality of the papers in both content (scientific merit and originality) and written expression. These prizes have been funded by the Snodgrass Fund to commemorate the contribution of Dr. Florence Snodgrass (BA 1924).	
ARTS	Dr. Florence Snodgrass Graduating Prize in Psychology					A prize of $900 is awarded on the recommendation of the Department of Psychology for the best Psychology honours thesis on the Fredericton campus. This prize has been established by the Psychology Department in recognition of Dr. Snodgrass's (BA 1924) contribution to the Department and the University.	
ARTS	Dr. Florence Snodgrass Memorial Prizes					Up to six prizes to be awarded annually to Fredericton campus students for their outstanding achievements in and contributions to each of the following second year psychology courses offered on the Fredericton campus: Psychology 2113 Introduction to Statistical Methods in Psychology; Psychology 2203 Foundations of Developmental Psychology; Psychology 2403 Foundations of Social Psychology; Psychology 2603 Foundations of Learning, Memory, & Cognition; Psychology 2703 Foundations of Biological Psychology, and Psychology 2313 Foundations of Clinical Psychology. Students may receive more than one award in any given year. These prizes are funded by the Snodgrass Fund to commemorate the contributions of Dr. Florence Snodgrass (BA 1924).	
MULTIPLE	Society of Chemical Industry Merit Award					The Canadian Section of the Society of Chemical Industry will award three plaques, one each for Chemistry, Biochemistry and Chemical Engineering, to students with the highest standing in the final year of their course. In the case of a conflict, the award may be given to the student with the highest standing in an alternate Chemistry course, e.g. Environmental Geo-Chemistry, Physics/Chemistry. In the event that a student performs exceptionally well in an alternate Chemistry course, he/she may be considered as a candidate for one of the three awards. There will be only three categories and only one nomination in each "category". Awards apply only for four year programs.	
SCIENCE	Society of Chemical Industry Merit Award - Biochemistry					The Canadian Section of the Society of Chemical Industry will award three plaques, one each for Chemistry, Biochemistry and Chemical Engineering, to students with the highest standing in the final year of their course. In the case of a conflict, the award may be given to the student with the highest standing in an alternate Chemistry course, e.g. Environmental Geo-Chemistry, Physics/Chemistry. In the event that a student performs exceptionally well in an alternate Chemistry course, he/she may be considered as a candidate for one of the three awards. There will be only three categories and only one nomination in each "category". Awards apply only for four year programs.	
SCIENCE	Society of Chemical Industry Merit Award - Chemistry					The Canadian Section of the Society of Chemical Industry will award three plaques, one each for Chemistry, Biochemistry and Chemical Engineering, to students with the highest standing in the final year of their course. In the case of a conflict, the award may be given to the student with the highest standing in an alternate Chemistry course, e.g. Environmental Geo-Chemistry,	

158

						Physics/Chemistry. In the event that a student performs exceptionally well in an alternate Chemistry course, he/she may be considered as a candidate for one of the three awards. There will be only three categories and only one nomination in each "category". Awards apply only for four year programs.	
SCIENCE & SASE	William Somerville Prize					Two $350 prizes, one on each campus, are awarded annually on the recommendation of the Department of Mathematics and Statistics to outstanding students enrolled in a degree or joint degree program in Mathematics. The student should have successfully completed a minimum of 90 ch toward meeting the degree requirement. The prize was funded by the late Ella Somerville Foster.	
ARTS	Rabbi David Spiro Essay Prize					A prize of $500 to be awarded annually, on the recommendation of the Arts Council Committee on Honours and Prizes, to a student enrolled in an undergraduate degree program on the Fredericton campus who writes a deserving essay relating to Jewish history, literature or contemporary affairs. The prize is provided by the congregation of the Sgoolai Israel Synagogue.	
ENGINEERING	Dr. Rudolf Starkermann Prizes in Mechanical Engineering					Six prizes are to be awarded annually on the recommendation of the Department of Mechanical Engineering to Fredericton campus students as follows: Two prizes of $1,000 each are to be awarded to students who have the highest Cumulative Grade Point Averages after completing between 100 and 135 credit hours in the Bachelor of Science in Engineering (Mechanical) degree program; two prizes of $1,000 each to be awarded to students who have the highest Cumulative Grade Point Averages after completing between 75 and 100 credit hours in the Bachelor of Science in Engineering (Mechanical) degree program; one prize of $500 is to be awarded to a student who has the highest standing in Automatic Controls I; one prize of $500 is to be awarded to a student who has the highest standing in System Dynamics. The prizes are funded by Dr. Rudolf Starkermann, professor of Mechanical Engineering at UNB from 1970 to 1989.	
ENGINEERING	John Stephens Memorial Prize					The late Dr. John Stephens, a graduate of Trinity College, Dublin, was an eminent engineer and for many years the distinguished and beloved professor of Mechanical Engineering at this University. In 1954 the Associated Alumni established the John Stephens Memorial Prize to perpetuate his memory and to encourage scholarship in the Department of Mechanical Engineering. This prize, which has a cash value of $250, is awarded annually upon the recommendation of the head of the department to the leader of the graduating Mechanical Engineering students.	
ARTS	Willie Stewart Prize in Arts 1000					This prize of $2,250 has been established by the late Professor Neil MacGill in honour of his teacher, friend and colleague, Dr. W.F.M. Stewart, Head of the Philosophy Department from 1959-1965 and a spectacular lecturer to large classes. It is awarded annually on the recommendation of the Dean of Arts to a student with high standing in the Development of Western Thought course in the Regular Session on the Fredericton campus.	

ARTS	Willie Stewart Prize in Philosophy					This prize of $2,250 was established by the late Professor Neil MacGill in honour of his teacher, friend and colleague, Dr. W.F.M. Stewart, Head of the Philosophy Department from 1959-1965. It is awarded annually on the recommendation of the Department of Philosophy to a student with high standing in an advanced level undergraduate course dealing with metaphysics on the Fredericton campus.	
FORESTRY	Merlyn Stillwell Memorial Prize					A prize to be awarded annually upon the recommendation of the Faculty of Forestry and Environmental Management to a Forestry student with high academic standing and creative abilities who has demonstrated an interest in bioethics in forestry. The award is funded by family and friends of the late Merlyn A. Stillwell, a graduate of UNB in Science (Bio), 1949 and Masters in Science (Arts) 1957. Mr. Stillwell was a research scientist with the Canadian Forestry Service, and a part-time lecturer in the Faculty of Forestry at UNB until his untimely death in 1977. His research was aimed at gaining a better understanding of the forest environment with emphasis on tree diseases.	
SCIENCE	Noel Stone Memorial Prize					An annual prize of $485, donated by the late Dr. H.S. Stone, to be given to a student of the fourth year who, during the third year, has shown the most promise in the study of Biology and Chemistry. ("Year" refers to the particular year of the program as specified in the calendar description of the various BSc degree options.)	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. John F. H. Teed, Q.C. Memorial Prize in Science					A prize of not less than $250 to be awarded annually to a student on the Saint John campus who achieves the highest standing in one of the following courses, in this order of preference: GEOL 2212 (Sedimentology I), GEOL 2201 (Biogeology I), GEOL 2045 (Introductory Geology for Biologists), or BIOL 2585 (Introductory Ecology). The prize is funded by the family of the late Dr. Teed from moneys obtained for the use of Mary's Point Island, N.B., sandstone quarry for historical reconstruction of buildings in Nova Scotia.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	John (Jack) Terhune Prize in Marine Biology					A $500 prize to be awarded annually on the recommendation of the Department of Biological Sciences on the Saint John campus to the student graduating at Spring Convocation with the highest CGPA in the Bachelor of Science (Marine Biology) degree program on the Saint John campus. This prize is funded by Dr. Terhune, as well as the Biology Department in recognition of his distinguished service to the Biology Department and UNBSJ, and his outstanding career as a Marine Biologist.	
ARTS	The Department of English Form and Format Prize					One or more prizes totaling no less than $1,000 are awarded on the recommendation of the Department of English to a Fredericton campus student or students who has completed the requirements for the first year of the Bachelor of Arts degree program and has demonstrated excellence in at least 6 credit hours of English. A nomination letter from the course instructor and a portfolio of the student's work, including essays and exams, is required in order to be considered for this prize. The prize is funded by the Department of English through proceeds from the sale of Form and Format.	

KINESIOLOGY	Barry Thompson Prize					A prize of $1,000 is awarded annually to the student who has completed 2 years of the Bachelor of Recreation and Sport Studies Program. The award will be made to the student who has demonstrated the highest academic achievement (Cumulative Grade Point Average). The student can receive this award only once. The prize is funded by Physical Education and Recreation/ Kinesiology Alumni and Supporters.	
ARTS	Mary Tibbits Award					An award of $125 to be awarded annually on the recommendation of the Gender and Women's Studies Co-ordinator in consultation with the co-ordinating committee of the program to a Fredericton campus student who is graduating that year with a Minor in Gender and Women's Studies. The recipient will have assisted women in the Fredericton community through appropriate volunteer work, or will have actively participated in an organization that has as its goal the advancement and empowerment of women or has made a contribution to the area of the study of women.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. Carl K. Tompkins Prize					An annual prize to be awarded on the Saint John campus to the student with the highest mark in 1st year Science Chemistry lecture (term 2 CHEM 1072). The prize has been funded by colleagues & friends upon the retirement in 1999 of Dr. C.K. Tompkins, who taught Chemistry at UNB for over 30 years.	
NURSING	Theresa P. Totton Memorial Prize					A prize of $2,000 to be awarded annually on the recommendation of the Faculty of Nursing for clinical and academic competency in Nursing at the completion of the second year of the Bachelor of Nursing degree program. Funded by the Nursing Class of 1982 and friends of Theresa.	
SCIENCE	Lowell Trembath Memorial Award					The Lowell Trembath award, comprised of a book and a monetary component for the purchase of textbooks, is presented, on recommendation of the Department of Earth Sciences, to the student exhibiting the highest scientific and professional potential in mineralogy and the theory of solid state materials through achievement in courses previously taught by Professor Trembath. It has been made possible through the support of Lowell's students and friends who remember his humour and devotion to teaching, as well as his enduring interest in personal and professional development. The award is intended to encourage the continuation of his standards of learning and fundamental scientific endeavor.	
ENGINEERING	Dr. E. O. Turner Prize					A $250 prize awarded annually on the recommendation of the Faculty of Engineering to a Fredericton campus student who demonstrates qualities of leadership and breadth of horizon, coupled with a good academic standing, that should lead to a high station in future life. One candidate from each of the Departments of Civil, Electrical and Mechanical Engineering shall be nominated by each of the departments. This prize is funded by the Associated Alumni in honour of Dr. E.O. Turner, former Head of the Department of Civil Engineering and Dean of the Faculty of Engineering at UNB.	
UNRESTRICTED	U SPORTS Academic All-Canadian					Certificates and a monetary prize will be awarded annually on the recommendation of the Director of Athletics to the student-athletes who have achieved at least a 3.5 assessment grade point average and have contributed significantly to a varsity sport on the Fredericton campus. This prize is supported by U SPORTS and funded by the Friends of the Varsity Reds.	

SCIENCE, APPLIED SCIENCE & ENGINEERING	UNB Saint John Engineering Prize					A prize of $1,750 to be awarded annually on the recommendation of UNBSJ Engineering faculty members to an academically outstanding student who has completed the normal four terms of Civil, Chemical, Electrical, Software or Mechanical Engineering (approximately 90-95 credit hours) at UNBSJ and who will continue the degree at UNB. The prize has been funded by the Department of Engineering, alumni and friends.	
UNRESTRICTED	UNB Saint John SRC Student Leadership Award					One award of $2,500 to be awarded annually on the recommendation of the UNB Saint John SRC Student Leadership Committee to a full or part-time Saint John campus student who has made an outstanding contribution to student life and has demonstrated strong leadership skills in university activities. The recipient must be in good academic standing, have completed a minimum of 2 years (60 ch) of his or her undergraduate degree on the Saint John campus. The award is funded by Alumni, friends, and proceeds from UNB Saint John SRC Reunion events.	
SCIENCE, APPLIED SCIENCE & ENGINEERING	UNBSJ Nursing Prize					A prize of $500 to be awarded annually to an outstanding BN or BN/RN student on the recommendation of the Department of Nursing and Health Science, UNB Saint John.	
UNRESTRICTED	UNBSJ Student Leadership Award					Awards to be given annually at spring convocation to students on the Saint John campus who have demonstrated outstanding campus leadership in student activities and/or university activities. Notation to appear on student transcript. Nominations received and selections made by a committee of students and administration, headed by Student Services.	
ARTS	United Empire Loyalists Association of Canada - New Brunswick Branch Prize for History					One prize with a minimum of $200 awarded to the student with the highest standing in Hist 3365 The Formation of Loyalist Canada. In the event that this course is not offered, the prize will be awarded to the student with the highest standing in the course most appropriate to an understanding of the Loyalists and their part in the development of Canada. This prize has been funded by the United Empire Loyalists Association of Canada New Brunswick Branch.	
SCIENCE	Dr. H. Wouter and Charlotte D. S. van de Poll Prize					A $2,000 prize to be awarded annually on the recommendation of the Department of Earth Sciences to a Fredericton campus student entering third year of the Bachelor of Science or Bachelor of Science in Engineering (Geological), who showed outstanding academic achievement in the second year field school. In the event that the Department of Geology includes computer based geological map making and data management in its second year field school, the selection of the recipient of this prize may include a second year geology or geological engineering student with a demonstrated interest and aptitude in this aspect of geological mapping. The prize has been funded by Dr. H. Wouter van de Poll (BSc 1961, MSc 1963), retired UNB professor of Geology (1973-1995).	
ENGINEERING	Francis Vanicek Prize in Civil Engineering					An annual prize of $100 to be awarded, on the recommendation of the Department of Civil Engineering, to a student who has shown a high level of achievement in structural analysis and design and has completed between 90-120 ch of the regular program. The prize has been funded by colleagues of Professor Ralph M. Francis.	

ARTS	Harry Velensky Prize					A prize valued at approximately $400 has been made available to the University through the generosity of Mr. Harry Velensky, and is to be awarded annually to an undergraduate for the best essay, other than an Honours Thesis, on the subject of human relations, with a view to the promotion of a better understanding between all peoples at all levels of society.	
ARTS	Viator Award					An annual award or awards of up to $3,000 for a student or students in Classics and/or Ancient History on the Fredericton campus who has/have successfully completed at least two years or the equivalent (a minimum of 12 ch or equivalent) in Latin or Greek. The award is to be used for participation in an approved program of overseas summer study, archeology or research, preferably in classical lands. It must be used within nine months of graduation. The award is to be made by the Department of Classics and Ancient History. The award has been established by Mary Ella Milham.	
FORESTRY	Videto-Hadley Memorial Prize					Friends of the late Mr. B.W. Flieger of the Canadian International Paper Company, Montreal and Professor of Forest Engineering at the University of New Brunswick from 1927 to 1950, have offered a prize of $250 in memory of Professors H.E.D. Videto and C. Graham Hadley of the Forestry Faculty, who lost their lives in a drowning accident in October 1951. This prize will be awarded by the Students Forestry Association to a member for outstanding performance during the year.	
ARTS	David H. Walker Prize in Creative Writing					A prize of $1,000 to be awarded to a gifted undergraduate or graduate writer on the Fredericton campus. Applicants should submit a sample of their recent work (a short story or chapter of a novel, minimum 1500 words) to the Department of English. Past winners of this award are not eligible to enter the competition, and the work submitted cannot have previously won an award or prize. Finalists will be interviewed by the Selection Committee. The prize is funded by the family of the late David H. Walker.	
COMPUTER SCIENCE	Dr. W. Dana Wasson Prize in Computer Science					A prize of $1,500 to be awarded annually in recognition of Dr. Dana Wasson's lifetime contribution to computer science in New Brunswick. This prize is awarded to the best student who has just completed two years of study on the Fredericton campus in an undergraduate degree program in the Faculty of Computer Science. The prize is awarded on the basis of academic performance in the second year of studies in the degree program. The prize has been donated by IBM, NB Tel, and interested benefactors.	
KINESIOLOGY	Robert F. Watters Memorial Award					A prize of $200 to be awarded annually on the recommendation of a committee from the Faculty of Kinesiology to a student with special needs, or a student pursuing a career working with individuals with special needs such as those who are physically or mentally challenged or the elderly. The prize is funded by friends of the late Robert F. Watters.	
SCIENCE	Louis Weisner Memorial Prize in Mathematics					A prize dedicated to the memory of Louis Weisner, Professor of Mathematics at the University from 1955-1988. It is to be awarded on the recommendation of the Department of Mathematics and Statistics to an outstanding student on the Fredericton campus graduating in Mathematics. The Prize has been established by the family, students, friends, and colleagues of the late Dr. Weisner.	

ENGINEERING	The Late Richard Laurence Weldon Prize in Mechanical Eng.					A $1,715 prize awarded annually on the recommendation of the Department of Mechanical Engineering to a student with high academic standing who is entering the seventh term of a Mechanical Engineering program. The applicant is not eligible should he/she hold another major award tenable during his/her final year. The prize is funded by the late Mr. Richard Laurence Weldon.	The late Mr. Richard Laurence Weldon.
ENGINEERING	Eric E. Wheatley Memorial Medal					A medal and $500 prize to be awarded annually on the recommendation of the Mechanical Engineering Student-Faculty Liaison Committee (from nominations submitted by members of the faculty) to a graduating Mechanical Engineering student, who has demonstrated both practical ability and strong academic achievement. The medal has been endowed by friends of the late Professor Eric E. Wheatley, professor and developer of Mechanical Engineering at UNB from 1945 to 1973.	
ARTS	Mary Louise Whimster Memorial Prize					A prize of $500 to be awarded annually on the recommendation of the Department of French to the graduating student on the Fredericton campus who has, in the opinion of the Department, shown the highest achievement in the study of Literature in the Department. The prize has been funded by the Department of French.	
ARTS	Edna White Prize in Classics					A prize of up to $800 to be awarded annually to one or more students, graduate or undergraduate on the Fredericton campus, who continue their studies in Classics and Ancient History and are deemed by the Department of Classics and Ancient History to be worthy recipients of these awards. The prize is funded by the late Miss Edna White, Class of 1896 and LLD 1948.	The late Miss Edna White, Class of 96 and LLD 1948
SCIENCE, APPLIED SCIENCE & ENGINEERING	Walter C. & Marion (Waring) White Biology Prize					A prize of the annual earnings of the endowment to be awarded annually on the recommendation of the Department of Biological Sciences to a UNBSJ student who has shown promise in first year Biology in theoretical and laboratory studies. The prize is established in memory of Walter C. and Marion J. (Waring) White by their daughter, Nancy W. MacLeod.	
ARTS	Ernest Allan Whitebone History Prize					A prize of $500 to be awarded annually on the recommendation of the faculty members in History at UNB Saint John to an outstanding student on the Saint John campus who achieves high standing in a designated History course. The prize has been funded by the late Mrs. Elizabeth Whitebone.	
FORESTRY	W. T. Whitehead Memorial Prize					An annual prize of $195 was established by Mrs. W.T. Whitehead to be awarded to the student having the highest standing in the third year of a program leading to a bachelor's degree in the Faculty of Forestry and Environmental Management.	
ARTS	Norman Whitney Prize in Philosophy					A $300 prize to be awarded annually on the recommendation of the Department of Philosophy to an undergraduate student who writes in the year of the award an outstanding essay exploring the relatedness of scientific and spiritual perspectives in investigating the world. The prize has been funded by family and friends of the late Norman Whitney and the Department of Philosophy at the University of New Brunswick.	
KINESIOLOGY	Agnes Grey Wilson Prize					A prize of $250 to be awarded annually on the recommendation of the Faculty of Kinesiology to an outstanding female student who has completed the normal requirements for the first two years of the Bachelor of Science in Kinesiology degree program at UNB. The prize has been funded by the Associated Alumnae.	
PART-TIME AWARDS							

FACULTY	AWARD NAME	field	value	number	duration	conditions	donor
UNRESTRICTED	ALPS Bursaries for Part-time Students	Unrestricted.	$500.	Variable.	1 year.	Awarded on the basis of financial need to part-time students who are enrolled in an undergraduate degree, University certificate or non-degree program at UNB Fredericton and have completed at least 12 credit hours in their current program at UNB Fredericton. Students enrolled as full-time in the previous 12 months are not eligible to be considered.	Adult Learners, Part-Time Students Organization (ALPS).
UNRESTRICTED	ALPS Keener Award	Unrestricted.	$500.	1.	1 year.	Awarded to part-time or full-time undergraduate adult learners enrolled on the Fredericton campus. Full-time undergraduate adult learners must be at least 25 years old in order to be considered. Selection will be based on the student's participation in and contribution to the university and/or participation in and contribution to their community at large, and life considerations. Applicants must write a letter to the ALPS university selection committee and address these topics.	The Adult Learners, Part-Time Students (ALPS) Organization.
UNRESTRICTED	ALPS Scholarships for Part-time Students	Unrestricted.	$500.	Variable.	1 year.	Awarded to part-time students who are enrolled in an undergraduate degree or University certificate program at UNB Fredericton and have completed at least 12 credit hours in their current program at UNB Fredericton. Students enrolled as full-time in the previous 12 months are not eligible to be considered. Selection is based on academic achievement. Financial need may be considered.	Adult Learners, Part-Time Students (ALPS) Organization.
UNRESTRICTED	Alumnae Continuing Education Scholarship	Unrestricted.	Variable.	Multiple.	One per calendar year - may be renewed.	Awarded to a female part-time student on the basis of financial need and attainment of high academic performance. To be eligible, an applicant must (1) be enrolled in an undergraduate degree or certificate program at the University; (2) be registered as a part-time student in a degree - credit course(s) at the time of receipt of award; and (3) have completed successfully a minimum of 30 ch towards the academic program at UNB.	Associated Alumnae.
UNRESTRICTED	Dr. Richard Papenhausen Bursary for Part-time Students	Unrestricted.	$50 to $300 per course.	Multiple.	1 term.	Awarded to part-time Saint John campus undergraduate students who were not enrolled in full-time studies in the previous 12 months. Selection will be based on scholastic achievement and financial need.	Student Life and Support Services, UNB Saint John.
MULTIPLE	Catherine Earle and her parents Dr. Thomas and his wife, Mary (West), Earle Scholarship for Part-Time Students	Arts and Science.	Variable.	1.	1 year.	Awarded to a part-time student on the Saint John campus who is a graduate of a New Brunswick high school. Selection is made on the basis of scholastic attainment and financial need. The profile of the recipient must indicate that the recipient is hard working, and consideration may be given to the recipient's participation in extracurricular activities.	Friend of Catherine Earle.
EDUCATION	Norman S. Fraser Summer Term Scholarship	Education.	$330.	1.	1 Summer Term.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Education (Elementary, Middle or High School concentrations) who is registered in Education courses for the Summer Term. Selection is based on scholastic attainment and financial need. The recipient must be a New Brunswick resident.	The late Norman S. Fraser.
UNRESTRICTED	Dr. Robert Love Memorial Scholarship	Unrestricted.	Minimum $500.	1 or more.	1 year.	Awarded to a Fredericton campus student who has successfully completed the 5-week summer English Language Program and has been accepted into an undergraduate or graduate program at UNB. Selection is based on the student's academic achievement in the English Language Program.	Friends of Dr. Robert Love, who developed the founding courses for the English Language Programme.

UNRESTRICTED	Muriel McQueen Fergusson Foundation Bursary	Family Violence Issues.	Variable.	Multiple.	1 per calendar year.	Awarded on the basis of financial need to part-time Fredericton campus students who are registered in courses on Family Violence issues, including those in the train-the-trainer program, with preference given to students who are enrolled in the Family Violence Issues certificate program. The recipient must demonstrate successful academic performance.	The Muriel McQueen Fergusson Foundation.
College of Extended Learning	Occupational Health and Safety Award	Occupational Health & Safety.	Approx. value of Certificate or Diploma in OHS.	Up to 5 per calendar year.	1 year.	Awarded to students who are enrolled in the Certificate or Advanced Diploma in Occupational Health & Safety at UNB Fredericton. Recipients must be residents of New Brunswick.	
UNRESTRICTED	Roads Scholarship for Part-Time Degree Students	Unrestricted.	Variable (approx. the value of a 3 ch course).	Multiple.	1 term.	Awarded to part-time Fredericton campus students who are enrolled degree-credit programs at UNB and have completed at least 30 credit hours in the degree program. Recipients must be residents of New Brunswick and must not have been enrolled in full-time studies during the previous academic semester. Selection will be based on academic achievement and financial need.	John and Claire Morris and family and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Saint John Faculty Scholarships for Part-time Students	Unrestricted.	$200.	5.	1 year.	Student must be currently registered in a degree or full-credit certificate program on the Saint John Campus and must have successfully completed at least 30 ch in the degree, or certificate program. Selection is to be made on the basis of scholastic attainment and financial need.	UNBSJ Faculty Council.
UNRESTRICTED	Scoudouc River Continuing Education Awards	Unrestricted. Tenable only at post-secondary institutions.	Minimum $100 per course, maximum $300 per course.		A recipient may not receive more than one of these.	These awards are intended for part-time students and are open to persons residing in New Brunswick who were not engaged in full-time study during the twelve month period preceding date of application. Awards are open to part-time students with a real need and may be used for study towards credit or non-credit programs. Major consideration will be given to the relationship of the applicant's study plans to present employment or future career aspiration. At the time of application, an applicant must be a New Brunswick resident and a Canadian citizen, or, if a Landed Immigrant, must have resided in New Brunswick for at least twelve consecutive months prior to application. Those who have received in the same year other major financial awards are not eligible for consideration.	The late Dr. William L. Webster.
UNRESTRICTED	Summer Term Award	Unrestricted.	Variable.	Variable.	Summer Term.	Awarded to Fredericton campus students who have completed at least 24 credit hours at UNB Fredericton during the previous academic year and are attending Summer Term. Selection will be based on scholastic attainment and financial need.	
UNRESTRICTED	UNB Third Century Fund Continuing Education Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to part-time student(s) on the basis of scholastic achievement and financial need. To be eligible, applicants must be enrolled in a degree, certificate or diploma program at UNB and have successfully completed at least 30 ch of degree credit courses at UNB towards their academic program.	Contributors to the Third Century Fund.
UNRESTRICTED	University of New Brunswick Continuing Education Award	Unrestricted.	Variable.	Variable.	1 term.	Awarded to part-time undergraduate students enrolled in a degree or University certificate program on the Fredericton campus who have successfully completed a minimum of 30 credit hours at UNB. Awarded on the basis of financial need and high academic achievement.	Pepsi-Cola Canada Ltd.

MULTIPLE	Erin Maureen Adair Williams Scholarship	Nursing, Education or Social Sciences.	Approx. $400.	1.	1 year.	Awarded on the basis of financial need to a mature female part-time student enrolled in the field of Nursing, Education or the Social Sciences on the Saint John campus. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines and must demonstrate successful academic performance.	Friends and family of the late Erin Maureen Adair Williams and the New Brunswick University Opportunities Fund.
SCHOLARSHIPS FOR CONTINUING STUDENTS							
UNRESTRICTED	1998 Men's Hockey Championship Award	Unrestricted.	Up to tuition & fees.	1.	1 year.	Awarded to a returning member of the Varsity Reds Men's Hockey team who has completed at least the normal requirements for the first year of the degree program in which the student is registered and has achieved at least a 2.0 grade point average, as per U SPORTS regulations. The recipient will be nominated by his teammates as the one who places the program and his teammates before his own successes; shows respect for his teammates, coaches and training staff; and best represents the intangibles which are necessary for a team to succeed but may not get seen by the media or the fans.	1998 UNB Men's Hockey Team members, CIS Champions.
ENGINEERING	Wilson W. Abernethy Award in Construction Engineering	Civil Engineering.	$9,000.	1.	1 year.	Awarded to a Canadian student who is entering the final year of the Bachelor of Science in Engineering (Civil) degree program. Selection is made on the basis of a demonstrated interest in construction engineering as well as work experience on construction projects, with consideration given to financial need, extracurricular activities, practical potential, and ethical standards. In any given year the scholarship may not be awarded if a suitable candidate is not found.	John W. and Gail L. Abernethy.
ARTS	Daniel Ahern Scholarship in Philosophy	Philosophy.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirement for the second year of the Bachelor of Arts degree program, majoring or honouring in Philosophy. Selection will be based on academic achievement. Consideration will be given to students who have demonstrated improvement in their philosophy courses.	The University of New Brunswick Department of Philosophy.
UNRESTRICTED	Toks Akpata Memorial Scholarship	Unrestricted.	Min. $3,000.	1.	1 year.	Awarded to a Fredericton campus student who completed at least the minimum requirements for the first year of the degree program in which the student is registered. Selection is based on academic attainment. The recipient must also be an active member of the UNB Rugby Football Club, demonstrate the attributes of the consummate team player and exhibit unselfish dedication to his teammates and to the Club.	UNB Rugby Football Club Alumni.
BUSINESS ADMINISTRATION	Lorna Jenkins Alaffe Memorial Bursary	Business Administration.	Variable.	1.	1 year.	Awarded on the basis of financial need to a student in the Business Administration degree program on the Saint John campus who has demonstrated successful academic performance.	Mr. W. R. Jenkins and Nabisco Brands Ltd.
ENGINEERING	Alberta Land Surveyors' Association Academic Achievement Scholarship	Geodesy and Geomatics Engineering.	$2,000.	1.	1 year.	Awarded to a Geodesy and Geomatics Engineering student who has completed or has enrolled in the two cadastral surveying option courses: GGE5522 Survey Law II; GGE5833 Land Use Planning for Geomatics. Selection will be based on academic achievement.	Alberta Land Surveyors' Association.
UNRESTRICTED	John and Elsie Alexander Memorial Scholarship	Unrestricted.	Approx. $1,300.	2.	1 year.	Open to students who have completed at least the minimum requirements of the first year of the degree program. Selection will be made on scholastic attainment and financial need. Preference will be given to sons and daughters of Free Masons.	The estate of John B. Alexander.

MULTIPLE	Aliant Scholarship	Business Administration.	$2,000.	2.	1 year.	Awarded primarily on the basis of academic performance to students in the Business Administration degree program who have completed at least the normal requirements for the first year of the degree program. Eligible candidates must be residents of the Province of New Brunswick.	Aliant Telecom.
UNRESTRICTED	John Aubrey Allen Memorial Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of academic performance and financial need to a student who has completed at least the normal requirements for the first year of the program in which the student is registered at UNB.	The late Ethel Hazen Allen.
UNRESTRICTED	Alumnae Undergraduate Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Young women entering the penultimate year of a degree program and having good scholastic standing and need for financial assistance. At least one scholarship is to be awarded to a student who has completed her first four terms at UNBSJ.	Associated Alumnae.
UNRESTRICTED	Alumni Undergraduate Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Open to students who have completed at least the normal requirements for the first year of the program in which they are registered. Awarded primarily on the basis of scholastic attainment. Financial need may be considered.	Associated Alumni.
KINESIOLOGY	Joe and Deb Owens Kinesiology Scholarship	Kinesiology.	$7,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the second year of an undergraduate degree program in the Faculty of Kinesiology. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Joseph (BSE CE 1972) and Deborah (Merrithew) (BEd 1978) Owens and the New Brunswick University Opportunities Fund.
MANAGEMENT	A. George Anderson Scholarship	Business Administration.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Business Administration degree program. Preference will be given to a student who has demonstrated excellence in Marketing courses. Selection will be based on scholastic attainment and financial need.	The estate of A. George Anderson.
ARTS	Marion and Ernest Anderson Scholarship	Arts.	Variable.	1.	1 year.	Awarded to a student who is entering the fourth year of the Bachelor of Arts degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Kim Anderson and the New Brunswick University Opportunities Fund.
ENGINEERING	Nels Anderson II Scholarship	Civil Engineering.	$6,500.	2.	1 year.	Awarded to two students on the Fredericton campus who have a good academic standing (GPA 3.0 or better) and have a demonstrated involvement in student activities at the University, Faculty of Engineering or community level. In making the award, consideration will be given to students considered to have potential for developing a successful career in engineering. Preference will be given to students who meet the criteria and do not hold another major award. One scholarship to be awarded to a student who is beginning the third year of the Bachelor of Science in Engineering (Civil) degree program and one scholarship to be awarded to a student who is entering the final year of the Bachelor of Science in Engineering (Civil) degree program.	Family, friends, classmates of the late Nels Anderson II.
UNRESTRICTED	W. Stafford Anderson Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to students who have completed at least the normal requirements for first year of an undergraduate degree program and are residents of Northumberland County. Preference will be given to students enrolled in the Bachelor of Science in Forestry degree program. Selections made on the basis of scholastic attainment and financial need.	The Family of the late W. Stafford Anderson and the New Brunswick University Opportunities Fund.

KINESIOLOGY	Annual Eastern Canada Student Recreation Conference Award	Recreation & Sport Studies.	Variable.	1.	1 year.	Awarded to a student who has completed at least the second year of the Bachelor of Recreation & Sport Studies program. The recipient should have exhibited leadership ability, shown campus and/or community involvement in the field of recreation, and achieved a minimum 3.0 assessment year grade point average.	Planning Committee of the Annual Eastern Canada Recreation Conference.
UNRESTRICTED	Jean Campbell Argue Memorial Scholarship	Unrestricted.	$6,000.	1.	1 year.	Young woman showing intellectual promise and in need of financial assistance who has completed the normal requirements for the second year and beginning her third year of the program in which she is registered. Tenable at Fredericton campus only.	Canadian Federation of University Women-Fredericton.
ARTS	Aristotle Scholarship	Classics.	Min. $800.	1.	1 year.	Awarded to a student on the Fredericton campus who is enrolled in the Bachelor of Arts degree program and has declared a major or honours in Classics, Classical Studies or Classical Archaeology. Selection is based on scholastic achievement.	The Greek Canadian Community of New Brunswick.
SCIENCE	G. Vernon and Leila M. Ashfield Memorial Scholarship	Science.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for the third year of the Bachelor of Science degree program and has indicated the intention to pursue studies toward obtaining a degree in medicine. The recipients must be a graduate of a New Brunswick high school. Selection is based on academic achievement and financial need.	Mr. & Mrs. Dale Ashfield in memory of his father and mother, G. Vernon and Leila M. Ashfield and the New Brunswick University Opportunities Fund.
EDUCATION	Marion Thomas Ashfield Memorial Bursary in Education	Education.	$3,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Education in Early Childhood degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident according to the Provincial Government's Student Financial Services guidelines. Preference will be given to a student from a rural area of New Brunswick.	Family and friends of the late Marion Ashfield, a former New Brunswick teacher established this award to honour her love of teaching and her commitment to helping and supporting others. Contributions were also received from the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. Teresa Askanas Memorial Scholarship	Unrestricted.	$1,500.	1 or more.	1 year.	Awarded to a full-time or part-time student enrolled in an undergraduate degree program on the Fredericton campus who is returning to study after cancer treatment or being affected in some way by a medical illness. Selection is based on scholastic attainment. Consideration will be given to financial need.	PZU Group and friends and family of Dr. Teresa Askanas.
UNRESTRICTED	Associated Alumnae Athletic Award	Unrestricted.	$700.	1.	1 year.	Awarded to a female student who has completed at least the requirements for the first year of her degree program and who has demonstrated high academic achievement (3.0 Scholarship GPA), special athletic ability in a varsity sport on the Fredericton campus, and leadership abilities in the surrounding community.	UNB Associated Alumnae.

RENAISSANCE COLLEGE	Associated Alumnae Scholarship - Renaissance College	Interdisciplinary Leadership.	$750.	1.	1 year.	Awarded to a female student who has completed the minimum requirements for the first year of the Bachelor of Philosophy in Interdisciplinary Leadership degree program on the Fredericton campus. Selection is based on academic achievement and financial need.	UNB Associated Alumnae.
ENGINEERING	Association of New Brunswick Land Surveyors Scholarship	Geodesy and Geomatics Engineering.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the requirements for the first year of the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program. Preference will be given to the student who has completed or has enrolled in the two cadastral surveying option courses: GGE5522 Survey Law II; GGE5833 Land Use Planning for Geomatics. The recipient must be a resident of New Brunswick, according to the NB Provincial Government Student Financial Services Guidelines. Selection will be based on academic attainment and financial need.	Association of New Brunswick Land Surveyors Association and the New Brunswick University Opportunities Fund.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Margaret Benoit Ayerst IODE Memorial Nurses' Scholarship	Nursing.	Variable.	1 or more.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic attainment and financial need.	William John Ayerst and the New Brunswick University Opportunities Fund.
SCIENCE	Sharon L. W. Bachinski Memorial Scholarship	Earth Sciences.	Approx. $1,000.	1.	1 year.	Open to students in Earth Sciences on the Fredericton campus. Selections are made on the basis of scholastic attainment.	Friends and family of the late Dr. S.L.W. Bachinski, Professor of Geology, UNB.
ARTS	Richard J. Bagley Memorial Scholarship in English	Arts.	$1,000.	1.	1 year.	Awarded to an undergraduate student on the Fredericton campus who has graduated from a New Brunswick high school, has completed at least 90 ch towards the Bachelor of Arts degree program, and is enrolled in the English Major or Honours program. Preference will be given to students who have demonstrated excellence in at least one upper-level Canadian Literature course. Selection will be based on academic achievement and financial need.	Friends and Family of Richard J. Bagley, BA '72, MA '79 and the New Brunswick University Opportunities Fund.
ARTS	Alfred G. Bailey Undergraduate Scholarship	Arts.	Variable.	1.	1 year.	Awarded to a Fredericton campus student in the Bachelor of Arts program who has declared a major in History. Selection will be made on the basis of scholastic attainment and financial need.	Students, colleagues and family established this scholarship in memory of Alfred G. Bailey, professor of History at UNB, librarian, poet and professor emeritus.
ENGINEERING	Dr. A. Foster Baird Alumni Scholarship	Engineering.	$250.	1.	1 year.	Awarded annually to an Engineering student entering the final year of a bachelor's program. Major consideration for this award shall be given to the student's interest and participation in student activities. The student's scholastic achievement and financial need will be the other factors considered.	Associated Alumni.
EDUCATION	Muriel Farris Baird Alumnae Scholarship	Education.	Variable.	Variable.	1 year.	Awarded to a female Fredericton campus student who has been admitted to the Bachelor of Education degree program. Selection will be based on academic achievement and financial need.	Associated Alumnae.
UNRESTRICTED	Joyce E. Baker Memorial Bursary	Science.	$5,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student with a spouse. The recipient must have demonstrated successful academic performance. Preference will be given to a student who has completed	William J. Baker, BSc. 1957.

						at least the minimum requirements for the first year of the Bachelor of Science degree program.	
SCIENCE	William J. Baker Bursary	Science.	$2,000.	1 or more.	3 years.	Awarded on the basis of financial need to a Fredericton campus student with a spouse. The recipient must have demonstrated successful academic performance. Preference will be given to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program.	William J. Baker BSc. 1957.
ENGINEERING	Dr. R. Balasubramanian Memorial Scholarship	Electrical Engineering.	Variable.	1.	1 year.	Open to a student in Electrical Engineering who has completed at least 35 ch in the Electrical Engineering program. The recipient will be selected on the basis of academic achievement and financial need.	Friends of the late Dr. Balasubramanian.
FORESTRY	Elaine MacKay Bancroft Scholarship	Forestry.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for the third year of an undergraduate degree program in the Faculty of Forestry and is beginning the fourth year. Selection will be based on academic achievement and financial need.	J. Douglas Bancroft.
NURSING	Bannon Family Scholarship	Nursing.	$1,450.	1.	1 year.	Awarded to a student from the Moncton area who is enrolled in the Bachelor of Nursing Advanced Standing program at the Moncton site. Selection is based on academic achievement. Consideration may be given to the student's involvement in extracurricular activities and/or financial need.	Douglas Bannon.
MANAGEMENT	Shaila Bari Memorial Scholarship	Business Administration.	$2,000.	1.	1 year.	Awarded to a female international student on the Fredericton campus who has completed at least the minimum requirements for the first year of the Bachelor of Business Administration degree program. Selection will be based on academic achievement (minimum 3.0 GPA) and financial need.	The Faculty of Management and friends and family of the late Shaila Bari.
MULTIPLE	Tanya V. M. Barrett Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a student in the Bachelor of Education degree program. Selection is made on the basis of scholastic attainment and financial need.	Family of the late Tanya V.M. Barrett, BSc 1978, BEd 1984, UNB.
MULTIPLE	William L. Barrett Engineering and GeoScience Scholarship	Engineering or Earth Science.	$1,000.	1.	1 year.	To be awarded annually to a student in the Engineering or Earth Sciences (GeoScience) program at UNB on the Fredericton campus who has successfully completed one year of student (a minimum of 35 ch) leading to the degree of Bachelor of Science in Engineering or Earth Sciences. Preference will be given to students who have graduated from a high school within the City of Fredericton.	APEGNB Fredericton Branch and Judy L. Irvine.
UNRESTRICTED	Paul and Rita Barry Memorial Bursary	Unrestricted.	$3,000.	2.	1 year.	Awarded on the basis of financial need to a Saint John campus student from St. John, Kings or Charlotte County who has completed at least the first year of an undergraduate degree program and has demonstrated successful academic performance. Consideration will be given to the student's participation in or contribution to campus life such as sports, student governance, theatre, music and campus clubs, as well as off campus community activities such as volunteering for charitable activities.	The family of Paul and Rita Barry.
NURSING	Marjorie Bastow Scholarship	Nursing.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the first year requirements for the Bachelor of Nursing degree program. Selection will be based on academic achievement and financial need.	Estate of Marjorie Bastow (BA 1947)
EDUCATION	Stanley E. Bateman Memorial Bursary	Education.	$1,400.	1.	1 year.	Awarded on the basis of financial need to a student who is enrolled in the Bachelor of Education degree program. Preference will be given to a student in the Bachelor of Education concurrent degree program who has declared or completed a major in English. The recipient must be a	Friends and Family of Stanley Bateman, former member of the Faculty of

						New Brunswick resident, according to NB Student Financial Services guidelines.	Education and the New Brunswick University Opportunities Fund.
MANAGEMENT	BBA Class of 1964 Scholarship	Business Administration.	$1,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Business Administration undergraduate degree program. Selection will be based on academic achievement and financial need.	BBA Class of 1964.
MANAGEMENT	BBA Class of 1974 Scholarship	Business Administration.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student entering the second or third year of a Bachelor of Business Administration degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	BBA Class of 1974 and the New Brunswick University Opportunities Fund.
MANAGEMENT	BBA Graduates (1954-1959) Bursary	Business Administration.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a student continuing beyond first year (30 credit hours) in the BBA program on the Fredericton campus. The recipient must have a satisfactory academic record as determined by the Faculty of Management.	BBA graduates from 1954-1959.
ENGINEERING	BC Land Surveyors Foundation UNB Scholarship	Geodesy and Geomatics Engineering.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Geomatics) degree program. Preference will be given to students from British Columbia and or students who are registered as a student or member of the Association of BC Land Surveyors. Selection will be based on academic achievement. This scholarship is also open to transfer students.	Association of BC Land Surveyors.
ENGINEERING	Ira and Gladys Beattie Memorial Scholarship in Civil Engineering	Civil Engineering.	Variable.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick high school, has completed the requirements for the first year of the Bachelor of Science in Engineering (Civil) program and is beginning the second year. Preference will be given to a student from Restigouche County. Selection will be based on scholastic attainment and financial need.	Ira and Gladys Beattie and the New Brunswick University Opportunities Fund.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Barry and Flora Beckett Bursary	Science, Applied Science, or Engineering.	$1,500.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the second year of an undergraduate degree program in the Faculty of Science, Applied Science and Engineering and has demonstrated successful academic achievement. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Barry and Flora Beckett, family & friends and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Ted & Betty Bedard Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the second year of an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines, with preference given to a student from Fredericton, Riverview, Saint John, Sussex or St. Stephen. Preference will also be given to a student who has demonstrated leadership and/or civic responsibility through participation in campus organizations, student government, community volunteer organizations or campus athletic activities.	Family and friends of the late J. Robert "Ted" Bedard (BSF 1949) and Elizabeth A. "Betty" Bedard (BA 1948) and the New Brunswick University Opportunities Fund.

EDUCATION	Dr. David Beebe Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student in the Bachelor of Education degree program who has completed a Bachelor of Business Administration degree. Selection is based on academic achievement and financial need.	Colleagues and friends of the late Dr. David Beebe.
MULTIPLE	Alan David Bell Memorial Scholarship	Chemical Engineering or Science.	Variable.	1.	1 year.	Open to Fredericton campus students who are graduates of a New Brunswick high school and are starting the second year of the Engineering or Science degree program at UNB. Preference is given to a candidate in Chemical Engineering or a candidate in Science with a major in Chemistry. Selection is made on the basis of scholastic attainment and financial need.	Family and friends of the late Alan David Bell, a first year Chemical Engineering scholarship student at UNB and 1992 FHS graduate and the New Brunswick University Opportunities Fund.
MULTIPLE	Dr. J.A.M. Bell Memorial Scholarship	Nursing, Science, or Arts.	Subject to need.	Variable.	1 year.	Available to Nursing students who have successfully completed the requirements for the first year of the Nursing program. Available also to students entering their penultimate or final year in Science or Arts who intend to study medicine. Preference will be given to students who had graduated from High Schools in Northumberland County. Selection is based on academic achievement and financial need.	Friends of the late Dr. J. Alex M. Bell.
MULTIPLE	Charles S. Bennett Memorial Scholarship	Civil Engineering.	Variable.	3 (of equal value).	1 year.	Awarded on the basis of scholastic attainment and financial need to three students in Civil Engineering who have just completed the first year of the program at UNB (a minimum of 30 credit hours).	Mrs. Helen A. Bennett.
ENGINEERING	Lorne Berggren Scholarship	Mechanical Engineering.	$10,000.	3.	1 year.	Awarded to Fredericton campus students who are Canadian citizens enrolled in the Bachelor of Science in Engineering degree program with preference to those in mechanical engineering. Selection will be based on academic achievement and demonstration of good practical thinking and entrepreneurial spirit as demonstrated, for instance, by students who intend to complete the Diploma in Technology Management and Entrepreneurship.	Lorne Berggren.
MULTIPLE	Lt. Gov. Wallace S. Bird Memorial Scholarship	Business Administration, Engineering, or Forestry.	Approx. $1,300.	3.	1 year.	Deserving students entering their second year. Students must be native of New Brunswick, Nova Scotia, Prince Edward Island, or Newfoundland or have resided in any of these four provinces for at least ten years preceding the award. Selections are made on the basis of scholastic attainment and financial need.	M.T.M. Holdings Limited.
NURSING	Katharine E. Black Memorial Bursary	Nursing.	$450.	1.	1 year.	Given annually to a student from New Brunswick who has completed the requirements for the first year in the Faculty of Nursing and who requires financial assistance.	Sir Howard Douglas Chapter, I.O.D.E., Fredericton and the New Brunswick University Opportunities Fund.
SCIENCE	Marven L. Blakely Scholarship	Mathematics or Physics.	$9,500.	4.	1 year (may be renewed).	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program and has declared a major in mathematics or physics. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Marven L. Blakely (BA 58) and the New Brunswick University Opportunities Fund.

MULTIPLE	Bliss Family Scholarships	Engineering or Education.	Variable.	2.	1 yr Education; Up to 3 yrs Engineering	One renewable scholarship will be awarded annually to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering degree program, is a graduate of a New Brunswick High School and is a Canadian citizen. One scholarship will be awarded to a Fredericton campus student beginning the Bachelor of Education degree program with preference given to a student who has graduated with a Bachelor of Science in Kinesiology. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selections are made on the basis of scholastic attainment and financial need.	Bob Bliss (BScEE 1952), Tim Bliss (BScCE 1954), John Bliss (BScCE 1955), Iris Bliss (BSc 1957, BEd 1959), all UNB graduates, established these scholarships in honour of their parents, George and Gladys Bliss. The scholarships also received support from the New Brunswick University Opportunities Fund.
UNRESTRICTED	BMO Financial Group/Rebecca (Becky) Watson Award	Unrestricted.	Up to tuition & fees.	1.	1 year.	Awarded to a female student who is enrolled at UNB Fredericton and has demonstrated a high skill level participating on a UNB Reds Team. Preference will be given to a student on the UNB Reds women's hockey team. The recipient must also have exceptional leadership qualities and a minimum 80% entering average or a 3.5 grade point average. This award is open to transfer students.	BMO Financial Group and friends of Rebecca (Becky) Watson.
EDUCATION	Bond-Gartke Scholarship in Education	Education.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who is entering the Bachelor of Education program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. Preference will be given to a female student.	Stephanie Gartke (BA 1972, BT 1972), Marsha Bond (BA 1972, BT 1972), Kristopher Richard (BA 2008) and the New Brunswick University Opportunities Fund.
MULTIPLE	Brian W. Boucher Scholarship	Forestry or Business.	$500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program in the Faculty of Forestry and is a graduate of a New Brunswick High School. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Preference will be given to graduates of Bathurst High School. If there is no qualified student available, then a student from the Faculty of Management may be selected. Selection is based on academic achievement, financial need, extracurricular activities and community involvement.	Brian W. Boucher and the New Brunswick University Opportunities Fund.
MULTIPLE	Marie-Paule F. Boucher (Godin) Scholarship	Forestry or Biology.	$500.	1.	1 year.	Awarded to a female student on the Fredericton campus who has completed at least the minimum requirements for the first year of an undergraduate degree program in the Faculty of Forestry. The recipient must be a graduate of a New Brunswick High School with preference given to graduates of Mathieu Martin High School. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. If there is no qualified student available, one may be chosen from the Bachelor of Science program who has declared a major in Biology.	Marie-Paule Boucher (Godin) and the New Brunswick Unversities Opportunities Fund.

						Selection is based on academic achievement, financial need, extracurricular activities and community involvement.	
MULTIPLE	George Frederick Boyer Memorial Bursaries	Biology.	Variable.	Variable.	1 year.	Awarded on the basis of financial need and academic performance to students in the Science degree program to enable them to attend, or continue to attend UNB and pursue the study of Biology.	The late Alberta Boyer.
MULTIPLE	Joseph Braithwaite Memorial Scholarship	Geomatics Engineering.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student in the Geomatics Engineering degree program.	The Surveying Engineering Class of 1989, and friends of the late Joseph Braithwaite.
ENGINEERING	Ralph Edwin Brannen Scholarship	Engineering.	$7,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program in the Faculty of Engineering. Selection is based on academic achievement. Consideration may be given to financial need and/or extracurricular activities.	The estate of Roseland Irene Brennan.
ARTS	Anthony W. Branscombe Memorial Scholarship	English.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Arts degree program, declared a Major or applied for (or been admitted to) Honours in English and has a demonstrated interest in creative writing. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Family and friends of the late Anthony Watson Branscombe, a former UNB Arts and Science student and the New Brunswick University Opportunities Fund.
SCIENCE	Michael C. Branscombe Memorial Scholarship	Biology.	$8,000.	1.	1 year.	Awarded to Fredericton campus students in the Faculty of Science who are majoring in Biology and who have graduated from a New Brunswick high school. The scholarship is intended to assist students whose career plans have the potential to ease the suffering of human beings. Selections are made on the basis of scholastic attainment and financial need.	Family and friends of the late Michael Christian Branscombe, a former UNB Science student and the New Brunswick University Opportunities Fund.
ENGINEERING	Dale and Carol Bray Scholarship	Civil Engineering.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students who have completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program and do not hold a major scholarship. Selection is based on academic achievement.	Dr. Dale Bray (BScCE 1963, MSE CE 1965) and Mrs. Carol Bray (BA 1968).
ENGINEERING	Jacqueline and Gerard Breau Memorial Scholarship	Engineering.	Min. $2,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in a Bachelor of Science in Engineering degree program who has successfully completed the minimum credit hour requirement for two complete years of study. Preference will be given to an undergraduate student who is registered in the Electrical Engineering degree program. Selection will be made on the basis of scholastic attainment and financial need.	Mrs. Jacqueline Breau.

ARTS	Carol Bronnum Memorial Scholarship	Political Science.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of a degree program and has declared a major in Political Science. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Selection is based on academic achievement.	Friends and family of Carol Bronnum.
MULTIPLE	Winston A. Bronnum Memorial Scholarship	Education or Applied Arts.	$2,250.	1.	1 year (may be renewed).	Open to Fredericton campus students enrolled in the Bachelor of Education degree program or the Bachelor of Applied Arts degree program. Selection will be made on scholastic attainment. If not renewed, the scholarship will alternate between an Education student and a Bachelor of Applied Arts student.	The Estate and family of the New Brunswick artist, Winston A. Bronnum.
KINESIOLOGY	Dax Brown Memorial Scholarship	Kinesiology.	Approx. $1,200.	1.	1 year.	To be awarded to a student who has successfully completed three years of the Bachelor of Kinesiology program and who demonstrates academic excellence, qualities of leadership and professional promise.	Anonymous.
UNRESTRICTED	Gary Brown Family Merit Award	Unrestricted.	Up to tuition & fees.	1 or more.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program, must have achieved a 2.0 grade point average, as per U SPORTS regulations and special athletic ability and skill in the sport of men's varsity soccer as well as leadership abilities in his surrounding community. This award is also open to transfer and graduate students, as well as students who are enrolled in a minimum of 9 credit hours.	Patrons of Varsity Reds Soccer.
UNRESTRICTED	N. Myles Brown Undergraduate Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Open to students who have completed at least the normal requirements for the first year of the program in which they are registered. Selections are made on the basis of scholastic attainment and financial need.	The Woodstock Museum Inc.
UNRESTRICTED	Leslie E. Bruce Environmental Scholarship	Unrestricted.	$10,000.	2.	1 year.	Open to full-time undergraduate and graduate students in any discipline, from any UNB campus. Recipients must show promise of becoming the leaders of tomorrow in the environmental field and demonstrate that they have either been accepted into an accredited post-secondary institution or course of study outside of UNB, or alternatively, be enrolled in a UNB course or internship that takes place elsewhere.	Friends and Family of the late Leslie Bruce, a UNB student who was tragically killed in December 2006.
FORESTRY	Michael J. Bruhm Memorial Scholarship in Silviculture	Forestry.	Variable.	Variable.	1 year.	Open to students who have completed approximately 90 - 100 ch in the UNB Bachelor of Science in Forestry degree program. Selection is made on the basis of financial need, satisfactory academic performance and consideration of extracurricular activities. Recipients must have demonstrated excellence in Silviculture courses and an interest in the area of Silviculture.	Friends, relatives and colleagues of Michael J. Bruhm across Canada, including colleagues in the British Columbia Ministry of Forests, the Forest Industry, and the Association of British Columbia Professional Foresters.
MULTIPLE	M. Louise Burbidge Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a student in the Bachelor of Education degree program who is a graduate of an NB high school. Selection is based on academic performance and financial need.	Margaret Burbidge.
UNRESTRICTED	Elizabeth Burton Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to students who have completed at least the normal requirements for the first year of the program in which they are registered and have demonstrated successful academic performance.	Mrs. Elizabeth Burton.

MULTIPLE	William S. Butler & Jeffrey W. Butler Memorial Scholarship	Forestry, Forest Engineering, or Renaissance College.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a Canadian high school and who has completed either the minimum requirements for one year of study in the Bachelor of Forestry or Bachelor of Forest Engineering degree programs, or two years of study at Renaissance College. The Renaissance College candidate must be pursuing the science option. Selection is based on scholastic achievement.	Friends and family of the late William S. Butler.
UNRESTRICTED	Caines Family Scholarship	Unrestricted.	Min. $500.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the second year of an undergraduate degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Extended family of Hubert and Margaret Caines and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Calgary Alumni Bursary	Unrestricted.	Min. $500.	1.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program and is from southern Alberta. The recipient must demonstrate successful academic achievement and involvement in extracurricular activities and/or community involvement. Preference will be given to a student from Calgary.	Calgary Alumni.
UNRESTRICTED	Ian R. Cameron Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to a student entering second year of studies in any program on the Saint John campus who has completed the first year of studies (minimum 30 ch) with high academic standing. Financial need will be taken into consideration.	Ian & Heather Cameron and friends. Dr. Cameron is a Professor Emeritus in Physics and a retired former Dean of Faculty.
UNRESTRICTED	Canadian Federation of University Women - Fredericton Scholarship	Unrestricted.	$4,500.	1.	1 year.	Awarded to a mature female Fredericton campus student who has completed at least the normal requirements for the first year of the program in which the student is registered at the University. The recipient must be a New Brunswick resident, as defined by Student Financial Services. Selection is based on academic achievement and financial need.	Canadian Federation of University Women-Fredericton and the New Brunswick University Opportunities Fund.
ENGINEERING	Cansel Award	Geodesy and Geomatics Engineering.	$2,500.	1.	1 year.	Awarded to a Fredericton campus undergraduate or graduate Geodesy and Geomatics student. Selection is based on academic achievement and demonstration of innovation to push boundaries of what is capable in the geospatial community.	Cansel.
ENGINEERING	Ajay Cariappa Bursary	Civil Engineering.	$2,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who is enrolled in the third or fourth year of the Bachelor of Science in Engineering (Civil) degree program. The recipient must have successful academic performance and, in keeping with the professional experience of Ajay Cariappa have a demonstrated interest in construction engineering.	Peter Kiewit Sons' Inc., and the friends and family of the late Ajay Cariappa (MSE CE '00).
ARTS	Bliss Carman Memorial Scholarship in English Literature	Arts.	Variable.	Multiple.	1 year.	Open to students in the Faculty of Arts who have completed at least the normal requirements for the first year of the Arts degree program at UNB. Preference will be given to students who have demonstrated excellence in at least 12 ch in English Literature.	The late Dr. Lorne Pierce.
ARTS	Captain Royal A. Carrick and Marjorie Oatey Carrick Memorial Scholarship	Arts.	Variable.	Variable.	1 year.	Awarded to students majoring in English Literature, who have taken at least one course in poetry, prose, or music writing. Selection is made on the basis of scholastic achievement.	Estate of Royal Alexander Carrick.

ENGINEERING	Wayne Carson Scholarship in Engineering	Engineering.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program. Selection is based on academic achievement. Preference will be given to a student who intends to complete the Diploma in Technology Management & Entrepreneurship.	Wayne Carson (BSE CE 1987, LLB 1990).
FORESTRY	David J. Cartwright Memorial Scholarship	Environment & Natural Resources.	Variable.	1.	1 year.	Open to students on the Fredericton campus entering the final year of the Bachelor of Science in Environment and Natural Resources, with preference given to those who have declared a major in wildlife. Candidates should have combined scholastic ability with a demonstrated interest in wildlife management.	The Atlantic Society of Fish and Wildlife Biologists.
BUSINESS ADMINISTRATION	Frederick J. Cashwell Memorial Scholarship	Business.	Variable.	1.	1 year.	Awarded to a Saint John campus student from the greater Saint John area who has completed the normal requirements for the first year of the Bachelor of Business Administration degree program. Selection will be based on scholastic attainment and financial need.	Edith Maye Cashwell and Gold Star Window Cleaning Co. Ltd., established in 1942 by Frederick J. Cashwell and the New Brunswick University Opportunities Fund.
ENGINEERING	Stanley B. Cassidy Memorial Engineering Undergraduate Scholarship	Engineering.	$1,000.	1.	1 year.	To be awarded annually to a student in the Engineering program at UNB on the Fredericton campus, who has successfully completed at least one year of study (a minimum of 35 ch) leading to the degree of Bachelor of Science in Engineering. Preference will be given to students who have graduated from a high school within the APEGNB Fredericton Branch District (i.e. comprising York, Carleton, Sunbury, and Queens Counties).	APEGNB Fredericton Branch.
UNRESTRICTED	Michael Cavanagh Memorial Award	Unrestricted.	Min. $1,700.	1.	1 year.	Awarded to a student on UNB's Fredericton campus who has completed at least the normal requirements for the first year of the degree program in which the student is registered. The recipient must have demonstrated a special athletic ability in the sport of men's varsity hockey at UNB, successful academic performance (minimum 2.0 grade point average, as per U SPORTS regulations), and, in keeping with the character of Michael Cavanagh, the capacity to experience life to its fullest. This award is open to transfer students, as students who are enrolled in a minimum of 9 credit hours.	Friends of Michael Cavanagh.
ENGINEERING	Jonathan Fullarton CBCL Engineering Scholarship	Engineering.	$2,000.	1.	1 year.	Awarded to a student who is entering the final year of the Bachelor of Science in Engineering degree program. Selection will be based on scholastic attainment.	CBCL Limited.
FORESTRY	Centennial Scholarship in Environment & Natural Resources	Environment & Natural Resources.	Variable.	1 or more.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of the Bachelor of Science in Environment & Natural Resources. Selection is based on academic achievement.	Alumni and Friends of the Faculty of Forestry & Environmental Management.
FORESTRY	Centennial Scholarship in Forestry	Forestry.	Variable.	1 or more.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of the Bachelor of Science in Forestry. Selection is based on academic achievement.	Alumni and Friends of the Faculty of Forestry & Environmental Management.

MULTIPLE	Dr. Everett Chalmers Hospital Auxiliary Bursaries	Nursing.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to Nursing students who are graduates of a high school in York, Victoria, Carleton or Sunbury Counties and who have successfully completed a minimum of one academic year at UNB in either the Basic or Post RN Nursing program.	Dr. Everett Chalmers Hospital Auxiliary and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Ellen S. Chambers Memorial Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students who have completed at least the requirements for the first year of an undergraduate degree program. Selection will be based on academic achievement.	The late Ms. Ellen Sanders Chambers.
UNRESTRICTED	Chinese New Year Scholarship	Unrestricted.	$1,500.	1.	1 year.	Awarded to a UNB Saint John international student from the People's Republic of China with the highest standing entering fourth year.	Proceeds from the Chinese New Year Celebration.
SCIENCE	Christian-Birmingham Memorial Scholarship	Science.	Max. $200.	1.	1 year (may be renewed).	Awarded to a student on the Fredericton campus who has completed at least the normal requirements for the first year of the Science degree program. Selection is made on the basis of scholastic attainment. Scholarships will be awarded to graduates of a Carleton County and a York County high school, with preference given to a graduate of a Carleton County high school.	Howard J. Christian and his wife Amy Beatrice (Birmingham) Christian.
NURSING	Margaret B. Christie Memorial Scholarship	Nursing.	$5,000.	1.	1 year.	Awarded to a student who has completed the requirements for the first year of the Bachelor of Nursing or Bachelor of Nursing Advanced Standing Program. Preference will be given to a student who has demonstrated interest in palliative care. Selection will be based on scholastic attainment.	Friends and family of the late Margaret B. Christie.
UNRESTRICTED	Alden R. Clark Scholarship (IODE)	Unrestricted.	Variable.	Variable.	1 year.	Open to Fredericton campus students who have completed at least the normal requirements for the second year of a degree program in which they are registered, and are graduates of a New Brunswick High School. Selections are made on the basis of scholastic attainment and financial need.	IODE Clark House Trust Fund and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Helen E. (Crowe) Clark Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to Fredericton campus student who has completed at least the normal requirements for the first year of an undergraduate degree program. The recipient must be a New Brunswick resident who is a member of a UNB Reds hockey team and has successful academic performance (minimum 3.0 scholarship grade point average). Selection is also based on financial need.	Richard (BSc CE 1964) and Margaret Clark.
ARTS	Ralph B. Clark Memorial Scholarship	Arts.	Variable.	Variable.	1 year.	Awarded primarily on the basis of scholastic attainment to students who are entering the penultimate year (completed a minimum of 60-66 ch) of the Arts degree program at UNB.	The late Mrs. Georgie Alberta Ryan Clark.
UNRESTRICTED	Canon WJ Clarke Award in Men's Soccer	Unrestricted.	$750.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program, has demonstrated academic achievement and special athletic ability in the sport of men's varsity soccer. Recipients must have achieved a 2.0 grade point average, as per U SPORTS regulations. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Clarke Family.
UNRESTRICTED	Class of 1935 Scholarship	Unrestricted.	Min. $1,000.	1 or more.	1 year.	Awarded to students on the basis of scholastic attainment and financial need, with consideration given to participation in extracurricular activities.	The Class of 1935.
MULTIPLE	Class of 1939 Scholarship	Arts, Engineering, Science, or Forestry.	Min. $1,750.	2 or more.	1 year.	Awarded to UNB students who are registered in either the Bachelor of Arts, Science, Engineering or Forestry degree programs and who have completed at least the normal requirements for the first year. Selection is made on the basis of scholastic attainment and financial need.	The Class of 1939.

UNRESTRICTED	Class of 1942 War Memorial Scholarship	Unrestricted.	Min. $1,500.	1 or more.	1 year.	Awarded to Fredericton campus students who have just completed the normal requirements for the first year of the degree program in which they are registered at UNB. Selections are made primarily on the basis of scholastic attainment.	Members of the Class of 1942, on the occasion of their 50th reunion, in memory of those classmates killed in the Second World War.
UNRESTRICTED	Class of 1945 Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who is entering the second year of studies at the University of New Brunswick with preference given to a student attending the Fredericton campus. Selection is made on the basis of scholastic attainment and financial need.	The Class of 1945.
UNRESTRICTED	Class of 1948 Red n' Black Revue Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who has completed the requirements for the first year of his/her degree program. Selection will be based on academic achievement, financial need and participation in extra-curricular activities. Preference will be given to a student who is involved in UNB's Red n' Black Revue.	The Class of '48, originators of the Red n' Black Revue.
FORESTRY	Class of 1955 Forestry Alumni Scholarship	Forestry.	$5,000.	2.	1 year.	Awarded to a Fredericton campus student entering the fourth year of study in the Bachelor of Science in Forestry degree program. Selection is based on academic achievement and financial need.	Members of the Forestry Class of 1955.
ENGINEERING	Class of 1958 Engineering Alumni Scholarship	Engineering.	$4,250.	1.	1 year.	Open to Fredericton campus students who have completed at least the minimum requirements for the third year of the Bachelor of Science in Engineering degree program (all disciplines). Selection will be made on the basis of scholastic achievement and financial need.	Class of 1958 Engineering Alumni.
ENGINEERING	Class of 1974 Civil Engineering Scholarship	Civil Engineering.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student from the Atlantic Provinces who has completed at least the minimum requirements for the third year of the Bachelor of Science in Engineering (Civil) degree program. Selection will be based on academic achievement and financial need.	Class of 1974 Civil Engineering.
UNRESTRICTED	Class of 1982 Bursary	Unrestricted.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to Fredericton campus students who have completed at least the requirements for the first year of an undergraduate degree program and have demonstrated successful academic performance. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines.	The Class of 1982 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Class of 1992 Scholarship	Unrestricted.	Approx. $500.	1.	1 year.	Awarded to a Fredericton campus student who is entering the final year of a degree program. Selection will be based on scholastic attainment with consideration given to financial need.	The class of 1992.
SCIENCE	Clayton-Wilkinson Scholarship	Science.	Variable.	1.	1 year.	Awarded to a Fredericton campus student from New Brunswick who has completed the normal requirements for the first year of the Bachelor of Science degree program. Preference will be given to students majoring in Chemistry. Selection will be made on scholastic attainment and financial need.	Mrs. Jane Clayton Morrisey and the New Brunswick University Opportunities Fund.
NURSING	Andrea Clowater Memorial Scholarship	Nursing.	$500.	1.	1 year.	Awarded to a Fredericton campus student in the final year of his/her Bachelor of Nursing degree program. Selection is based on scholastic attainment and involvement in the community and/or campus life. The recipient must be a compassionate caring student nurse as determined by Professors and instructors. The recipients must have a positive outlook with regards to Nursing and life in general. The recipients must be recognized as having the above qualities by his/her peers, instructors and patients.	Family and friends of the late Andrea Clowater.

UNRESTRICTED	R. H. (Bob) Cockburn Rugby Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program, has demonstrated academic achievement and special athletic ability and skill in the sport of rugby.	Joseph Cormier (BPE 1976, MPE 1979).
EDUCATION	Della H. Cody Memorial Scholarship	Education.	$1,250.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Education degree program. Selection is based on academic achievement. Preference will be given to the student who has completed a Bachelor of Science in Kinesiology.	Friends of the late Della H. Cody.
ENGINEERING	R.J. Collier Memorial Scholarship	Electrical Engineering.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student entering the graduating year of his or her studies in one of the undergraduate degree programs under the Department of Electrical Engineering. Selection is based on the best combination of the qualities of good scholarship and active interest in matters outside the scope of the regular program of study.	Friends and students of the late Professor R.J. Collier.
ARTS	Maurice L. Collins Memorial Scholarship in Philosophy	Philosophy.	Approx. $500.	1.	1 year.	Awarded to an undergraduate or graduate student, alternating each year between the Fredericton campus and the Saint John campus. The student must have completed the requirements for at least the second year of a Bachelor of Arts degree program. Selection will be made on the basis of academic achievement. Preference will be given to the students who demonstrate an aptitude in the field of Philosophy, have declared a major in Philosophy or have decided to do postgraduate work in Philosophy, preferably in the area of contemporary European philosophy or ancient Greek philosophy.	Family of Maurice L. Collins.
MULTIPLE	Colter Family Bursary	Athletics, Nursing, Engineering, or Business Administration.	$500.	Multiple.	1 year.	Awarded on the basis of financial need to students who have demonstrated successful academic performance and have graduated from a New Brunswick high school. Candidates must have completed at least the requirements for the first year of the Bachelor of Nursing, Bachelor of Science in Engineering or Bachelor of Business Administration degree program or have completed the requirements for the first year of an undergraduate degree program and have demonstrated excellence in varsity athletics.	The Colter Family.
ENGINEERING	Colter/Aviva Canada Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded to Fredericton campus Civil Engineering students who have graduated from a high school in the Atlantic provinces. Selections are made on the basis of scholastic attainment and financial need.	Colter/Aviva Canada, in honour of their 50 year business relationship with Diamond Construction.
ARTS	Dr. Ann Gorman Condon Memorial Scholarship	Arts.	$1,500.	1.	1 year.	Awarded to a Saint John campus student who has completed the requirements for the second year of the Bachelor of Arts degree program. Preference will be given to the student who has enrolled or completed courses on women in history. Selection is based on academic achievement.	Family and friends of Dr. Ann Gorman Condon.
UNRESTRICTED	Dr. Thomas J. Condon International Scholarship	Unrestricted.	$1,300.	1.	Spring/Summer Session or 1 year.	Open to international visa students on the Saint John campus who have completed at least the normal requirements for the first year of the degree program in which they are registered at UNB. Selections are made primarily on the basis of scholastic attainment.	Proceeds from Thomas J. Condon Scholarship Dinner October 1996.
UNRESTRICTED	Dr. Thomas Condon University in the Community Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a Saint John campus student who has graduated from a Saint John area high school and has completed at least the requirements of the second year of his/her degree program. Selection will be based on academic achievement, financial need and a	Proceeds from the evening of appreciation, "Hats off to Tom," held May 14, 2003 at

						demonstrated involvement in extracurricular activities benefiting student life and/or the surrounding community.	the Saint John Trade and Convention Centre and the New Brunswick University Opportunities Fund.
NURSING	Connolly Bursary in Nursing	Nursing.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to a New Brunswick student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program and has demonstrated successful academic performance. Preference will be given to graduates of Minto High School. The bursary is available to Nursing students at UNB Fredericton, Saint John and Moncton.	Anonymous and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Sisters of Charity - Honoria Conway Memorial Scholarship	Unrestricted.	$1,500.	1.	1 year.	Awarded to a female student on the Saint John campus who has completed at least the minimum requirements for the first year of an undergraduate degree program. Selection is based on scholastics attainment (minimum 3.0 scholarship GPA) and financial need. Community involvement will also be considered.	The Sisters of Charity of the Immaculate Conception, Saint John, NB, to celebrate the spirit of Honoria Conway (1815-1892), foundress of the Sisters of Charity and a pioneer in New Brunswick education.
ARTS	Cook Family Bursary	Arts.	Min. $1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who is enrolled in the Bachelor of Arts degree program, and has declared a major in English. The recipient must be a graduate of a high school in the Greater Saint John area, have demonstrated successful academic performance and a love for English.	The Cook Family Fund, a permanently endowed fund of the Greater Saint John Community Foundation and the New Brunswick University Opportunities Fund.
MULTIPLE	Gerald Cook Scholarship	Business Administration.	$2,000.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Business Administration degree program and has declared a major in accounting. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Family of Gerald Cook and the New Brunswick University Opportunities Fund.
UNRESTRICTED	J. Roy and Shirley L. Cooper Bursary	Unrestricted.	Up to Tuition.	1 or more.	1 year (may be renewed).	Awarded on the basis of financial need to students who have achieved at least an overall "B" average (3.0 gpa) in their preceding academic year in an undergraduate degree program. The bursaries are open to students on either campus in the following faculties: Business; Computer Science; Education; Engineering; Forestry & Environmental Management; Kinesiology; Law; Management; Nursing; Renaissance College; Science; and Applied Science and Engineering.	J. Roy and Shirley L. Cooper.

ENGINEERING	William P. Cooper Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program with a minimum 3.5 scholarship grade point average. One $3,000 scholarship will be awarded annually to a student who is enrolled in CE 5612 Construction: Financial and Industry Issues and one $3,000 scholarship awarded annually to a student who is enrolled in CE 5623 Project Management. In the years when these courses are not offered, one $3,000 scholarship is to be awarded to a student who is enrolled in CE 3603 Construction Engineering. Selection will be based on scholastic achievement and a demonstrated interest in building construction. Consideration may be given to the student's involvement in extracurricular activities in high school or at university. A third $3,000 scholarship will be awarded provided the recipient meets the conditions above and is enrolled in the TME diploma program.	William P. Cooper.
ENGINEERING	Ron Covill Memorial Scholarship	Civil or Geological Engineering.	$4,250.	5.	1 year.	Awarded to Fredericton campus students who have graduated from a high school in Atlantic Canada and have completed at least the first year of the Bachelor of Science in Engineering (Civil or Geological) degree program. Preference will be given to students entering the second year of the Bachelor of Science in Engineering (Civil or Geological) degree program. Selection is based on academic attainment and financial need.	Family of the late Ron Covill, BScEng (Civil) '69.
EDUCATION	Patricia Cranton Adult Education Scholarship	Education.	Min. $20,000.	Min. 1.	1 year.	Awarded to a Fredericton campus student who has taken a year's leave from employment to attend full-time in either the B.Ed., M.Ed., or Ph.D. in Adult Education (preference in that order). Selection is made on the basis of a letter of intent regarding the individual's professional goals in adult education, academic achievement, experience in adult education, and financial need. This award is also open to second entry students enrolled in at least three courses.	Patricia Cranton, Professor of Adult Education.
UNRESTRICTED	Kourtney Creamer Merit Award	Unrestricted.	$200.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program and has made exceptional contributions to the university community and who has used their time and talents to advocate in the area of mental health. The recipient must demonstrate successful academic performance.	Vice-President's Office, University of New Brunswick Saint John and friends and family of Kourtney Creamer.
NURSING	Mildred Alice Crowell Scholarship	Nursing.	Approx. $1,000.	1.	1 year.	Awarded to a female student who is a graduate of Leo Hayes High School, Fredericton High School or Ecole Ste Anne, has just completed the requirements of the first year of the Bachelor of Nursing degree program on the Fredericton campus and is beginning the second year of the program. Selection will be based on scholastic attainment and financial need.	The Fredericton Community Foundation Inc. and the New Brunswick University Opportunities Fund.
SCIENCE, COMPUTER SCIENCE	Dr. Arthur Cunningham Computer Science Scholarship	Computer Science.	$500.	1.	1 year.	Awarded to a Saint John campus student who has completed the minimum requirements for the first year of the BScCS, BISc, BCS degree program or a concurrent program involving one of these. Selection will be based on academic achievement.	Friends of the Department of Computer Science in memory of Dr. Arthur Cunningham, father of Dr. Ruth Shaw (BScDA 1980, MScCS 1986, PHD 1994).

							Professor of computer science at UNBSJ 1994-2018.
MULTIPLE	Albert J. and T. Ferne Odessa Currie Memorial Scholarship	Science or Nursing.	$1,000.	1.	1 year.	Awarded to a student who has graduated from a New Brunswick high school and has completed at least the minimum requirements for the first year of a degree program. Preference will be given to the student who intends to pursue a career in health care. Selection will be based on scholastic attainment and financial need.	The family of Albert & Ferne Currie and the New Brunswick University Opportunities Fund.
MULTIPLE	Heather Locking-Cusolito and John Cusolito Scholarship	Nursing.	$4,000.	1.	1 year.	Awarded to a student who is beginning the final or penultimate year of the Bachelor of Nursing or the Bachelor of Nursing Advanced Standing Program. Selection is based on academic performance. Consideration may be given to financial need.	Heather Locking-Cusolito and John Cusolito.
MULTIPLE	Wellington B. Cuthbertson Memorial Scholarship in Electrical Engineering	Electrical Engineering.	Variable.	Variable.	1 year.	Awarded to undergraduate students in the Electrical Engineering degree program who have graduated from a high school in New Brunswick. Selections are made on the basis of scholastic attainment and financial need, with consideration given to the recipients' qualities of leadership.	Mrs. Marion C. Cuthbertson.
NURSING	Mildred Alice Crowell Scholarship	Nursing.	Approx. $1,000.	1.	1 year.	Awarded to a female student who is a graduate of Leo Hayes High School, Fredericton High School or Ecole Ste Anne, has just completed the requirements of the first year of the Bachelor of Nursing degree program on the Fredericton campus and is beginning the second year of the program. Selection will be based on scholastic attainment and financial need.	The Fredericton Community Foundation Inc. and the New Brunswick University Opportunities Fund.
MANAGEMENT	Joseph M. Dable Scholarship	Business Administration.	Tuition.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Business Administration degree program on the Fredericton campus and has demonstrated a strong interest in entrepreneurship such as involvement in the IBEC and/or Activator program. Selection will be based on academic achievement.	Habib (BBA 1991, MBA 1994) and Hiroko Dable in honour of Joseph Dable, father and small business entrepreneur whose trust and integrity grew business and networks.
FORESTRY	David A. Daugharty Memorial Scholarship	Forestry or Forest Engineering.	Variable.	Multiple.	1 year.	Awarded to Fredericton campus students who have completed at least the requirements for the second year of the Bachelor of Science in Forestry or Bachelor of Science Engineering (Forest Engineering) and have demonstrated successful academic performance. Selection will be based on financial need with preference given to students who participate in extracurricular activities and show a dedication to the field and study of Forestry or Forest Engineering	Friends and family of the late David A. Daugharty, Assistant Dean of the Faculty of Forestry and Environmental Management from July, 1990 until his death in January of 2005.
FORESTRY	Glenn & Mary Daugharty Forestry Scholarship	Forestry or Forest Engineering.	Variable.	Variable.	1 year.	Awarded annually to a continuing student who has completed at least the first year of the BScFE = 44 credit hours or BScF = 36 credit hours.	Glenn & Mary Daugharty with matching funds from Northern Telecom.
UNRESTRICTED	Major Ralph Daughney Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to a deserving New Brunswick student who is enrolled in an undergraduate degree program.	Friends and family of the late Major Ralph Daughney.

ARTS	Margot MacLauchlan Dawson Memorial Scholarship	Spanish.	$1,500.	1.	1 year.	Open to Fredericton campus students majoring in Spanish who have completed at UNB at least 45 ch in Arts. Selections are made on the basis of scholastic attainment and financial need.	Julia MacLauchlan and Warren McKenzie.
ENGINEERING	Louis and Montoura Debly Undergraduate Scholarship	Civil Engineering.	Min. $1,000.	1.	1 year.	Awarded to a Fredericton campus student who is entering the final year of the Bachelor of Engineering (Civil Eng) degree program and who has shown a high level of achievement in the structural engineering courses. Selection is based on scholastic attainment.	Louis Debly, CE '47.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Lorraine Dee Memorial Scholarship	Health Sciences.	Approx. $500.	3.	1 year.	Open to Saint John campus students who are graduates of a New Brunswick high school and have completed at least the minimum requirements for the first year of the Bachelor of Health Sciences (Radiography) degree program. Selection is based on scholastic attainment and financial need.	Dr. Gerry Clayden and the New Brunswick University Opportunities Fund.
ENGINEERING	Richard F. Dee Memorial Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded to a student who has completed at least the normal requirements for the first year of the Bachelor of Science in Engineering (Civil). Selection is based on academic achievement. The recipient must be New Brunswick resident, according to the Provincial Government's Student Financial Services guidelines.	Robert Dee.
ENGINEERING	Department of Civil Engineering Venture Scholarship	Civil Engineering.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements of the first year of the Bachelor of Science in Engineering (Civil) degree program. Selection will be based on academic achievement and financial need.	Faculty members and friends of the Department of Civil Engineering UNB Fredericton.
ARTS	Department of Humanities & Languages Scholarship	Arts.	Approx. $1,450.	1.	1 year.	To be awarded on the basis of scholastic attainment and financial need to a student enrolled in any majors program of the Department of Humanities and Languages.	The Department of Humanities and Languages.
ARTS	Dept. of Humanities & Languages Scholarship (Certificate of Proficiency in French Levels I and II)	Proficiency in French Program.	$250.	1 or more.	1 year.	To be awarded on the basis of scholastic excellence in a French course which is part of the Certificate of Proficiency in French program on the Saint John campus to a student or students who enrol in a further French course on the Saint John campus. The scholarship(s) will be withdrawn if the student(s) withdraw(s) from the course.	The Department of Humanities and Languages.
EDUCATION	Dietze-Turner Bursary in Adult Education	Adult Education.	$250.	1.	1 year.	Awarded on the basis of financial need to a full-time or part-time student enrolled in the Bachelor of Education, Adult Education program. The recipient must demonstrate successful academic achievement.	Beverlie A. Dietze and the late Agnes E. Turner.
MULTIPLE	Dixon Family Foundation Scholarship	Engineering.	$7,500.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick high school and has completed the requirements for the first year of the Bachelor of Science in Engineering program. Selection will be based on scholastic attainment and financial need. Preference will be given to a student studying civil engineering. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Greg (BSE CE 1980) and Shelli Dixon and the New Brunswick University Opportunities Fund.
ENGINEERING	Dr. Walter J. Dohaney Memorial Scholarship	Civil Engineering.	$2,250.	1.	1 year.	Open to Civil Engineering students from the Province of New Brunswick who have completed at least half of the requirements for the Civil Engineering program. The recipient will be selected on the basis of involvement in student affairs and/or athletics. Financial need will be a consideration and the student must have maintained an academic standing at or above a B average.	Family and friends of the late Walter J. Dohaney, Assistant Dean of Engineering 1981-1985 and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Walter V. Donahue Memorial Scholarship	Unrestricted.	Approx. $300.	1.	1 year.	A deserving student from the County of York, N.B.	Mrs. Agnes C. Donahue.
UNRESTRICTED	Jennifer Douglass Memorial Bursary	Unrestricted.	Approx. $1,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has graduated from a New Brunswick high school. The recipient should have just completed the requirements for the first or second year of his/her degree program and has demonstrated successful academic performance. Preference will be given to a student who has demonstrated humanitarian qualities.	Family and friends of the late Jennifer Douglass, a former employee of the MicMac Maliseet Institute, Faculty of Education, and the New Brunswick University Opportunities Fund.
MULTIPLE	Asa Dow Scholarship	Education.	$1,500.	1.	1 year.	Awarded on the basis of financial need to a male student in the Bachelor of Education degree program. The recipient must be a New Brunswick resident and must not be residing at home while attending university.	The late Asa Dow.
ENGINEERING	Thomas D. Doyle Award	Engineering.	Variable, min. $1,000.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick high school and has completed at least the first-year of the Engineering degree program on the Fredericton campus. Awarded on the basis of active involvement in an Engineering Undergraduate Society, scholastic attainment and financial need.	Trans Mountain Pipe Line Company in honour of Thomas D. Doyle, BSc Engineering, 1960, and the New Brunswick University Opportunities Fund.
ENGINEERING	Tom and Wanda Doyle Scholarship	Engineering.	$4,000.	2.	1 year.	Awarded to a student enrolled in the Bachelor of Science in Engineering degree program who is entering third or fourth year. The recipient must be a Canadian citizen. Selection will be based on academic achievement. Preference will be given to a student in Mechanical Engineering.	Tom (BSE ME 1960) and Wanda Doyle.
UNRESTRICTED	Muriel & Percy Dunlap Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of need to a mature Fredericton campus student who has completed at UNB at least the normal requirements for the first year of a degree program and has demonstrated successful academic performance.	Family of Muriel and Percy Dunlap.
ENGINEERING	Malcolm and Barbara Dunphy Scholarship	Engineering.	$500.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Mechanical) degree program. Selection will be based on academic achievement.	Barbara Dunphy (BA 1981, BEd 1986, MED 1994).

EDUCATION	Garfield Dykeman Memorial Bursary in Education	Education.	$4,000.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Education degree program. The recipient must demonstrate successful academic performance and be a New Brunswick resident according to the Provincial Government's Student Financial Services guidelines. Preference will be given to a student in the elementary program, who has volunteer experience or extracurricular activities and who comes from a rural area of New Brunswick.	Clarence Johnston Memorial Bridge Club, family and friends of the late Garfield Dykeman, a former New Brunswick teacher and principal, established this award to honour his enthusiastic support and contribution to a wide range community service, especially in the field of Education. Contributions were also received from the New Brunswick University Opportunities Fund.
EDUCATION	Viviane Edwards Scholarship in Second Language Education	Education.	Variable.	1 or more.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Education degree program, has completed or is registered in a minimum of 9 credit hours of courses in second language education, 6 credit hours of which must be in French and is intending to teach French as a second language. The student must meet the definition of a New Brunswick resident as defined by Student Financial Services. Selection will be based on scholastic attainment and financial need.	Friends and colleagues of Viviane Edwards and the New Brunswick University Opportunities Fund.
ENGINEERING	NB Energy Institute Environment Scholarship (Engineering)	Electrical Engineering.	$1,000.	1.	1 year.	Awarded to a student entering the fourth year of the Bachelor of Science in Engineering (Electrical) degree program on the Fredericton campus. Selection will be based on academic achievement. The recipient must demonstrate an interest in or aptitude for any facet of study related to energy-environment interactions. Preference will be given to Indigenous students.	New Brunswick Energy Institute.
FORESTRY	NB Energy Institute Environment Scholarship (Forestry)	Forestry.	$1,000.	1.	1 year.	Awarded to a student entering the fourth year of the Bachelor of Science in Environmental and Natural resources degree program on the Fredericton campus. Selection will be based on academic achievement. The recipient must demonstrate an interest in or aptitude for any facet of study related to energy-environment interactions. Preference will be given to Indigenous students.	New Brunswick Energy Institute
BUSINESS ADMINISTRATION	Enterprise Rent-a-Car Business Scholarship	Business.	$1,500.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of the Bachelor of Business Administration degree program. Selection will be based on academic achievement.	Enterprise Holdings Inc.
NURSING	Ericson Nursing Scholarship	Nursing.	Variable.	1.	1 year.	Awarded to a student in the Faculty of Nursing after the completion of at least one year of successful performance at UNB. The recipient is to demonstrate financial need as well as nursing excellence.	Penny K. Ericson, BSN, MSN

MULTIPLE	Perley and Phyllis Estey Bursary	Science, Engineering, Forestry and Environmental Management, Computer Science, Business Administration, or Nursing.	Variable.	Multiple.	1 year (may be renewed).	Awarded on the basis of financial need to Fredericton campus students who are entering the third or fourth year of an undergraduate degree program in Science, Engineering, Forestry and Environmental Management, Computer Science, Business Administration or Nursing. Preference will be given to students entering third-year. The recipients must be residents of York, Sunbury or Queen's county, outside the city/town limits of Fredericton or Oromocto. The recipients must demonstrate successful academic performance and industrious habits.	Perley and Phyllis Estey and the New Brunswick University Opportunities Fund.
ARTS	David and Ethel Evans Scholarship in History	History.	$1,200.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Arts degree program who is beginning the final year of the Honours program in History. Preference will be given to the student who has a demonstrated interest in British and/or European History. Selection is based on academic achievement.	Thomas Evans (BA 1960) in memory of his parents.
ARTS	David and Ethel Evans Scholarship in History (Honours)	History.	$4,000.	Min. 1.	2 years.	Awarded to a Fredericton campus student enrolled in the third year of the Bachelor of Arts degree program who is honoring in history. Selection is based on academic achievement.	Thomas Evans (BA 1960) in memory of his parents.
MANAGEMENT	Faculty of Management Undergraduate Bursary	Business Administration.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a student or students continuing beyond the first year (30 ch) in the BBA program on the Fredericton campus. The recipient must have at least an average academic record (minimum assessment year GPA 2.5).	Faculty, staff and friends of the Faculty of Management.
EDUCATION	Faculty of Education Scholarship	Education.	Variable.	1 or more.	1 or more years.	Awarded to a student who has been accepted to the Bachelor of Education degree program on the Fredericton campus. Selection is based on academic achievement. Consideration may be given to financial need and/or extracurricular activities.	Alumni and friends of the Faculty of Education.
FORESTRY	Sherif H. Fahmy Forest Soils Scholarship	Forestry and Environmental Management.	$1,250.	1.	1 year.	Awarded to a Fredericton campus student who has successfully completed courses in soils and plant-soil ecology and management and silviculture receiving an average of B+ or better. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Sherif H. Fahmy and the New Brunswick University Opportunities Fund.
ENGINEERING	Randolph and Anne Fairley Memorial Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a female student on the Fredericton campus who has completed at least the minimum requirements of the first year of the Bachelor of Science in Engineering degree program (any discipline). Selection is based on scholastic achievement and financial need.	Randolph Fairley, Class of 1944.
UNRESTRICTED	Lois Jennie Fairweather Memorial Bursary	Unrestricted.	$3,000.	1.	1 year.	Awarded on the basis of financial need to a female student on the Saint John campus who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Roxanne Fairweather and the New Brunswick University Opportunities Fund.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Anton Feicht Scholarship	Chemistry.	$500.	1.	1 year.	Awarded to a Saint John campus student who is entering the second year of the Bachelor of Science in Engineering (Chemical) degree program or the Bachelor of Science degree program and is a graduate of a New Brunswick high school. Preference will be given to students who have declared a major in Chemistry or Biology-Psychology. Selection will be based on scholastic achievement and financial need. This cannot be held in conjunction with another scholarship. Only students with	Dr. Anton Feicht and the New Brunswick University Opportunities Fund.

						scholarship GPA's between 3.0 and 3.6 will be considered.	
UNRESTRICTED	Dr. Jack T. H. Fenety, C.M. Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of an undergraduate degree program at UNB and is an active volunteer with CHSR. Selection will be based on scholastic attainment and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Dr. Jack T. H. Fenety, C.M. (LLD '89) and the New Brunswick University Opportunities Fund.
MANAGEMENT	Filgiano Family Scholarship	Business Administration.	$3,500.	1.	1 year (may be renewed).	Awarded to a student who has completed at least the minimum requirements of the first year for the Bachelor of Business Administration degree program in Fredericton. Selection is based on academic achievement and demonstration of overcoming significant barriers in the pursuit of a post-secondary education. Consideration may also be given to leadership qualities, or community involvement.	Paul Filgiano (BBA 1988) and members of the Filgiano family.
UNRESTRICTED	Ralph L. Finley Scholarship	Unrestricted.	Variable.	2.	1 year.	Awarded on the basis of academic performance and financial need to students who have completed at least the normal requirements for the first year of the program in which they are registered at UNB.	The late Ralph L. Finley.
MULTIPLE	Joseph A. and Kathleen A. Flanagan Memorial Scholarship	Science or Engineering.	$5,000.	2 or more.	1 year.	Awarded to students who are graduates of a New Brunswick high school and who have completed at the least the minimum requirements for the first year of the Bachelor of Science or the Bachelor of Science in Engineering (Civil, Computer, Chemical, Electrical, Geodesy & Geomatics, Geological, Mechanical). Selection is based on academic achievement and financial need.	The Estate of Joe Flanagan and the New Brunswick University Opportunities Fund.
MANAGEMENT	Cindy Flann Volleyball Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a female student on the Fredericton campus who has completed at least the minimum requirements for the first year of an undergraduate degree. The recipient must be a New Brunswick resident, demonstrate academic achievement (minimum 2.0 scholarship GPA, as per U SPORTS regulations) and special athletic ability in the sport of women's varsity volleyball. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours. Preference will be given to a student enrolled in the Business Administration degree program.	Cindy Flann, BBA 1984.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Jean Crawford Flemming Memorial Scholarship	Computer Science.	$1,500.	1.	1 year.	Awarded to a Saint John campus student who has completed the minimum requirements for the first year of the BScCS, BSc(DA), BCS or a concurrent program involving one of these. Selection will be based on academic achievement in Computer Science, Mathematics and Statistics courses.	J. Archie Flemming, former Professor of Mathematics and Statistics at UNB Saint John.
FORESTRY	B. W. Barney Flieger Memorial Scholarship in Forestry	Forestry.	Variable.	Variable.	1 year.	Awarded to Fredericton campus students who have completed the requirements for the second year of a Bachelor of Science in Forestry degree program. Selection will be based on academic achievement.	The late Mrs. Margaret Flieger.
FORESTRY	Forestry Special Award	Forestry.	Variable.	Multiple.	1 year.	Awarded to a student in Forestry or Forest Engineering who is a graduate of the Maritime College of Forest Technology.	Friends of the late B.W. Flieger.

NURSING	Blanche Botsford Fowler Nursing Bursary	Nursing.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to Fredericton campus students who have completed at least the minimum requirements for the first year of the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program and have demonstrated successful academic performance. The scholarship is available to Nursing students at Fredericton and Moncton sites.	Estate of Bernice Nesbitt.
SCIENCE	Donald E. Fowler Scholarship	Chemistry.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science degree program and has declared a major in chemistry. Selection is based on scholastic achievement.	Dr. Donald P. Fowler (BSF 1955), in honour of his father, Donald E. Fowler (BA 1926).
ENGINEERING	Professor Ralph Francis Bursary	Civil Engineering.	$1,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program and is a graduate of a New Brunswick high school. Preference will be given to a student specializing in structural design. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic achievement and financial need.	
UNRESTRICTED	Donald & Margaret Fraser Scholarship	Unrestricted.	Variable.	1.	1 year.	Open to students on the Fredericton campus who have completed at least the normal requirements for the first year of the program in which they are registered at the University. Selections are made on the basis of scholastic attainment and financial need.	Donald Fraser and Margaret Fraser Lambert.
NURSING	Nancy M. Fraser & Clara R. Stone Fraser Scholarship	Nursing.	Approx. $200.	1.	1 year.	Deserving Fredericton campus student having a high scholastic standing who requires financial assistance.	The late Norman S. Fraser.
BUSINESS ADMINISTRATION	Freedom Travel Bursary	Hospitality & Tourism.	$750.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who is enrolled in the Bachelor of Applied Management in Hospitality in Tourism. The recipient must demonstrate successful academic performance. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Freedom Travel.
ARTS	French Spanish German Scholarship	Arts.	Up to $1,000.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of an undergraduate degree who plans to continue their studies in French, Spanish or German. The recipient can hold the scholarship while participating in an official exchange through UNB to further their knowledge in French, Spanish or German.	Professors Celine Arabackyj, David Jory, Rosi Jory, Fatma Loutfi, Leslie Marcus and Suzanne Pons-Ridler.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dorothy C. (Dann) Friars Scholarship	Nursing.	$650.	1.	1 year.	Open to part-time and full-time students who are enrolled in the Bachelor of Nursing degree program at UNB Saint John. Selection is made on the basis of scholastic attainment with consideration of financial need.	G. W. & Dorothy C. Friars.
ENGINEERING	John H. Fulton Memorial Scholarship in Electrical Engineering	Electrical Engineering.	Variable.	Variable.	1 year.	Awarded primarily on the basis of academic performance to students who have successfully completed at least one year of study (a minimum of 35 ch) in the Electrical Engineering program at UNB.	The late John H. Fulton.
ARTS	L. Marie (Thompson) Fulton Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a Saint John campus student who is enrolled in the concurrent Bachelor of Arts/Bachelor of Education degree program. The recipient must be a New Brunswick resident. Selection is based on academic achievement and financial need.	Caryn M. Thompson

ARTS	Alice MacKenzie Gaukrodger Scholarship in Arts	Arts.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the second year of the Bachelor of Arts degree program. Selection is based on scholastic attainment and financial need.	Alice MacKenzie Gaukrodger.
SCIENCE	Geological Association of Canada - Mineralogical Association of Canada Fredericton '85 Scholarship	Earth Sciences.	$1,500.	1.	1 year.	Open to undergraduate students majoring in Earth Sciences. Selection to be made on the basis of scholastic achievement, financial need and extracurricular activities.	The Geological Association of Canada and the Mineralogical Association of Canada.
SCIENCE	Abraham Gesner Geoscience Scholarship	Earth Sciences.	$500.	1.	1 year.	Awarded to a Fredericton campus student from the Maritime provinces, who has completed at least the minimum requirements for the first year of the Bachelor of Science and has declared a major in Earth Sciences. Selection will be based on academic achievement.	Friends of Abraham Gesner.
MULTIPLE	R. W. Gilbert Memorial Scholarship	Engineering, Computer Science or Forestry.	Variable.	1.	1 year.	A deserving student in the Faculties of Engineering, including Computer Science, or Forestry and/or Forest Engineering.	The late Mrs. R.W. Gilbert.
ENGINEERING	John Gilchrist Associated Alumni Engineering Scholarship	Engineering.	$1,500.	2.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Engineering degree program. The recipient must be a graduate of a New Brunswick high school. Selection is based on scholastic achievement and financial need.	The late John Gilchrist, BSc EE 1932 and the New Brunswick University Opportunities Fund.
ENGINEERING	M. Patrick Gillin Award in Engineering	Engineering.	Variable.	Multiple.	1 year.	Awarded to deserving undergraduate students who have completed their high school education in New Brunswick, have demonstrated involvement in the community, have achieved a satisfactory academic record and require financial assistance. Students are not eligible for a Gillin Award in an academic year during which they have a co-op or PEP term.	The Gillin Family and the New Brunswick University Opportunities Fund.
MULTIPLE	Louis Joseph Godbout Memorial Scholarship	Geology or Geological Engineering.	Variable.	1.	1 year.	Awarded to a UNB student who has completed at least the normal requirements for first year of the Science or Geological Engineering degree program. Selection is made on the basis of scholastic attainment and financial need to a student who in a tangible way has demonstrated he/she will bring to the Geology profession a high degree of dedication and enthusiasm.	Co-workers at Utah Mines Ltd./Utah International Inc. and the Company.
UNRESTRICTED	Golden Jubilee Scholarship	Unrestricted.	$5,000.	1.	1 year.	Awarded to a student who has completed the third year of a four-year degree program, or the fourth year of a five-year degree program and is a New Brunswick resident, based on Student Financial Services guidelines for provincial residency. Selection will be based on academic excellence and financial need as defined by Student Financial Services.	The Province of New Brunswick established this scholarship in 2002 to commemorate the 50th anniversary of Queen Elizabeth's coronation.
ENGINEERING	Robin W. Gough Scholarship in Civil Engineering	Civil Engineering.	Min. $1,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the normal requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program. Selections are made on the basis of scholastic attainment and financial need.	Robin W. Gough, BScEE 1926, BScCE 1932.
ENGINEERING	Robin W. Gough Scholarship in Electrical Engineering	Electrical Engineering.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at UNB at least the normal requirements for the first year of the Bachelor of Science in Engineering (Electrical Engineering) degree program. Selections are made on the basis of scholastic attainment and financial need.	Robin W. Gough, BScEE'26, BScCE'32.

MULTIPLE	Gerry Govett Geoscience Scholarship	Earth Science and Geological Engineering.	$1,000.	1.	1 year.	Awarded to a fourth year student who has declared a major or honours in Earth Sciences or Geological Engineering. Selection will be based on academic achievement. Preference will be given to student whose thesis focuses on geochemistry.	Family and friends of Prof. Gerry Govett.
UNRESTRICTED	Grad Class 2008 Bursary	Unrestricted.	$580.	1.	1 year.	Awarded on the basis of financial need to Fredericton campus students who have completed at least the requirements for the first year of an undergraduate degree program and have demonstrated successful academic performance.	Class of 2008.
FORESTRY	Graduates' Award in Forestry	Forestry or Forest Engineering.	Variable.	Variable.	1 year (may be renewed).	Open to students who have completed at least the normal requirements for the first year of the program in which they are registered. Selections are made on the basis of academic performance and financial need.	Forestry Alumni and Alumnae.
ENGINEERING	Grandy, Gibson, Holmes Memorial Scholarship	Engineering.	$3,000.	1.	1 year.	May be awarded to a student in Engineering, at UNB who has demonstrated successful academic performance, has shown a potential for leadership in professional or civic affairs, and is entering the final year of the Engineering degree program.	The Association of Professional Engineers and Geoscientists of New Brunswick Foundation for Education in memory of Norman Grandy, P.Eng., Andrew Gibson, P.Eng., and Neville Holmes, P.Eng.
MANAGEMENT	Grant Thornton Scholarship	Business Administration.	$1,500.	1.	1 year.	Open to Fredericton campus students who have completed at least the requirements for the second year of the Business Administration degree program. Selection is based on excellence, qualities of leadership, professional promise and career aspirations in the field of chartered accountancy. Preference will be given to a student in the Co-op program who has attained high academic standing in at least 3 credit hours of accounting electives.	Grant Thornton, Chartered Accountants and Management Consultants.
ENGINEERING	Earl J. Grant Memorial Scholarship	Civil Engineering.	$1,750.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for first year in the Bachelor of Science in Engineering (Civil Engineering) degree program and has a demonstrated interest in the area of structural engineering. Selection will be based on scholastic attainment; consideration may be given to financial need.	Family and friends of Earl J. Grant, P. Eng. 1954, a Civil Engineering professor at UNB from 1958 until his untimely death in 1987.
EDUCATION	Agnes L. Green Memorial Bursary	Education.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need to a Fredericton campus student in the Bachelor of Education degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The family of the late Agnes L. Green and the New Brunswick University Opportunities Fund
UNRESTRICTED	Dorothy A. Gregg Memorial Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded to a female student with preference given to a West Indian woman student who has completed at least the normal requirements for the first year of the program in which she is registered at UNB, and who shows scholastic promise. Financial need will be a consideration in making the award.	Friends of the late Dorothy A. Gregg, wife of the late Milton F. Gregg, B.C., some time President of the University.
ARTS	Nan Gregg Scholarship in Creative Arts	Arts.	Variable.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the music minor or another creative arts minor (drama, film, creative writing) who demonstrates excellence in courses required for the minor. Selection is based on academic achievement. Preference will be given to students in the music minor.	The Estate of Miss Nan V. Gregg.

FORESTRY	Ernest H. Gunter Memorial Scholarship	Forestry and Environmental Management.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment to Fredericton campus students who have completed at least 30 credit hours in the Faculty of Forestry and Environmental Management.	The late Doris Gunter Bent.
FORESTRY	George Edward Gunter Memorial Scholarship	Environment & Natural Resources or Forestry.	$2,000.	1.	1 year.	Awarded to a graduate or undergraduate student on the Fredericton campus who has a demonstrated interest and involvement in environmental and sustainability issues. Selection will be based on academic achievement with consideration given to involvement in extra- curricular or co-curricular activities.	Friends and Family of the late George Edward Gunter, BScEng (Mechanical) 1959.
ARTS	Ben & Millie Guss Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for the first year of his/her degree program and intends to pursue an interest in fine arts, including creative writing, theatre, film, music, visual arts, or multimedia studies. Selection will be based on scholastic achievement and financial need. The recipient must be a NB resident, according to the NB Provincial Government's Student Financial Services guidelines.	Family of Ben and Millie Guss and the New Brunswick University Opportunities Agency.
EDUCATION	Eleanor Haines Memorial Scholarship	Education.	Min. $1,750.	1.	1 year.	A student of promise studying towards a degree in Education.	The late Hazel L. Haines.
FORESTRY	William Haliburton Memorial Scholarship	Forestry.	$4,500.	2.	1 year.	Awarded to Fredericton campus students who have completed at UNB at least the normal requirements for the first year of the Bachelor of Science in Forestry or Bachelor of Science in Forest Engineering degree programs. Selection is made on the basis of scholastic attainment. Preference will be given to students undertaking senior projects focused on forestry in harmony with nature, and/or those who have personal integrity and a demonstrated commitment to the environment.	Family of the late William Haliburton.
KINESIOLOGY	Zula V. Hallett Alumnae Scholarship in Kinesiology	Kinesiology.	$1,000.	1.	1 year.	Awarded to a female Fredericton campus student who has completed the requirements for her second year of a Kinesiology degree program. Selection will be made on scholastic achievement and financial need.	The Associated Alumnae.
UNRESTRICTED	Zula V. Hallett Scholarship (Marysville)	Unrestricted.	Variable.	1.	1 year.	Open to students who are permanent residents of Marysville, and have completed the normal requirements for the first year of the degree program in which they are registered at UNB. Selections are made on the basis of scholastic attainment and financial need.	The late Miss Zula V. Hallett and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Hamilton Family Athletic Scholarship	Unrestricted.	Min. $1,200.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of a degree program, has achieved a minimum 2.0 grade point average, as per U SPORTS regulations, in the previous year and is a member of a Varsity Reds athletic team. This award is to be given to a student who has made and will continue to make a positive contribution to the life and spirit of the university and surrounding community. The recipient must be a New Brunswick student. This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	Proceeds from the banquet held in honour of Clint Hamilton, former UNB Director of Athletics and friends of the Hamilton family.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Eileen Handa Nursing Bursary	Nursing.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed the minimum requirements for the second year of the Bachelor of Nursing degree program and has demonstrated successful academic performance. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Dr. Paul Handa and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Rupert D. & Jack C. Hanson Memorial Scholarship	Unrestricted.	$1,250.	1.	1 year.	Available to a deserving son of a returned male member of Canada's Armed Services or to a deserving son of a male member of Canada's Armed Service who lost his life in active service.	The late Mrs. Gussie P. Hanson.
UNRESTRICTED	Malcolm Harris Memorial Bursary	Unrestricted.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the requirements for the first year of an undergraduate degree program and has demonstrated successful academic achievement. Preference will be given to a student with a disability. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The family of the late Malcolm Harris (BBA 1976) and the New Brunswick University Opportunities Fund.
ENGINEERING	Hart Family Scholarship in Geological Engineering	Geological Engineering.	$2,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Geological) and has demonstrated a keen interest in making a career within the earth sciences. Selection is made on the basis of scholastic attainment and financial need to a student who in a tangible way has demonstrated that s/he will bring to the Geological Engineering profession a high degree of dedication and enthusiasm.	John Hart.
ARTS	Hon. Richard Hatfield Undergraduate Scholarship in Political Science	Arts Political Science.	$2,000.	1.	1 year.	Awarded to a student who has declared a major or honours in Political Science. Preference will be given to a student who graduated from a New Brunswick high school. Selection will be made on the basis of scholastic attainment, demonstrated leadership qualities and community skills.	The Fredericton Silverwood Progressive Conservative Association and the friends of Richard Hatfield.
ARTS	D. King Hazen Scholarship	Arts.	Variable.	Multiple.	1 year.	Open to students enrolled in a Bachelor of Arts program who have completed at least the normal requirements for the first year (30-36 ch) of their program at UNB. Preference will be given to students who have demonstrated excellence in at least six ch in English literature. Recipients should have a substantial interest in athletics.	The late D.E. Rosemary Hazen.
SCIENCE	Courtney Hebert Memorial Scholarship	Science.	$1,000.	1 or more.	1 year.	Awarded to a Saint John campus student enrolled in the Bachelor of Science degree program majoring in Biology-Psychology. Selection will be based on academic achievement. Preference will be given to a student with a physical disability or a student who is returning to study after being affected in some way by a medical illness.	Family and friends of Courtney Hebert.
MANAGEMENT	Holmes Entrepreneurial Scholarship	Business Administration.	$1,500.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program on the Fredericton campus and has demonstrated a strong interest in entrepreneurship. Preference will be given to a student who has enrolled in the Activator Program. Selection will be based on academic achievement.	Chris (BBA '85) and Vicki (BEd '84) (Camp) Holmes.
ENGINEERING	Jack Howett OCNI Scholarship	Chemical, Mechanical or Electrical Engineering.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Chemical, Mechanical or Electrical) degree program. The recipient must demonstrate a solid aptitude and interest in the field of nuclear engineering. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic attainment and financial need.	The Organization of Canadian Nuclear Industries (OCNI) and the New Brunswick University Opportunities Fund.

UNRESTRICTED	Allison Hubert Memorial Merit Award	Unrestricted.	Min. $1,000.	1.	1 year.	Open to Fredericton campus undergraduate students who have completed at UNB a minimum of 60 credit hours in their degree program. Preference is given to those who have made a contribution to the community and exhibited cross-cultural interests. Academic performance (minimum assessment year GPA 3.0) and financial need are considerations in the awarding of this merit award.	Friends of the late Allison Hubert, BScF, Class of 1949.
MANAGEMENT	IBEC Scholarship	Business Administration.	$1,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the second year of the Bachelor of Business Administration degree program and has demonstrated interest in entrepreneurship and/or international business. Selection is based on academic achievement and community involvement.	UNB International Business & Entrepreneurship Centre.
NURSING, SASE	IODE Provincial Chapter of New Brunswick Nursing Bursary	Nursing.	Min. $200.	4.	1 year.	Awarded on the basis of financial need to female students who have completed at least the minimum requirements for the first year of the Bachelor of Nursing or Bachelor of Nursing Advanced Standing degree program at each of the three New Brunswick sites. One additional bursary to be awarded to a mature student in Nursing. The recipient must demonstrate successful academic performance.	The Provincial Chapter of New Brunswick IODE.
SCIENCE	Ken Ireland Memorial Scholarship	Unrestricted.	$2,000.	2.	1 year.	Open to Fredericton campus students who have successfully completed two years of a degree program at UNB. Selections are made on the basis of scholastic attainment and financial need. Preference will be given to residents of New Brunswick who have demonstrated excellence in mathematics and have completed at least 9 credit hours in mathematics.	Family, friends and colleagues of the late Dr. Ken Ireland., Professor of Mathematics and Statistics.
ARTS	Sandra Irving Scholarship	Political Science.	$10,000.	1.	1 year.	Awarded annually to a student on the Saint John campus who has completed a minimum of 45 ch and is majoring or intending to major in Political Science. Selection is on the basis of academic achievement, career aspirations and candidates' statement of the scholarship's value in reaching career goals. Preference will be given to full-time students but part-time students are eligible.	Sandra Irving.
SCIENCE, SASE	Eileen M. Iwanicki Scholarship	Science.	$5,500.	2.	1 year.	Awarded to New Brunswick students who have completed the requirements for the second year of an undergraduate degree program in the Faculty of Science or the Faculty of Science, Applied Science & Engineering and have demonstrated an interest or declared a major in environmental studies. One scholarship will be awarded to a Fredericton campus student and one to a Saint John campus student. Selection will be based on academic achievement and financial need.	Eileen M. Iwanicki.
ARTS	Prof. Jack A. Iwanicki Scholarship	Arts.	$5,500.	2.	1 year.	Awarded to New Brunswick student who have completed the requirements for the second year of an undergraduate degree program in the Faculty of Arts and have declared a major in philosophy. One scholarship will be awarded to a Fredericton campus student and one to a Saint John campus student. Selection will be based on academic achievement and financial need.	Jack A. Iwanicki.
UNRESTRICTED	Mark Jeffrey Memorial Merit Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a student on the Fredericton campus who has completed at least the normal requirements at UNB for the first year of the degree program in which the student is registered and is returning to UNB. The recipient must have demonstrated a special athletic ability in the sport of hockey at UNB and demonstrated successful academic performance (minimum 2.0 grade point average, as per U SPORTS regulations). This award is open to transfer students as well as students who are enrolled in a minimum of 9 credit hours.	The Jeffrey family.

ARTS	Daniel F. Johnson Memorial Scholarship in History	History.	Min. $800.	1 or more.	1 year.	Awarded on the basis of financial need to full-time third or fourth year undergraduate students or full-time masters candidates in the Faculty of Arts on the Saint John campus, who have declared a major in history. The recipients must be residents of the Province of New Brunswick and demonstrate successful academic performance.	The Saint John Branch of the New Brunswick Genealogical Society Inc. in memory of Daniel F. Johnson who was a founding member of the Society, a past president thereof, a member of the Branch and a lecturer in a course in genealogy at UNB Saint John.
NURSING	Marjorie Johnston Memorial Scholarship in Nursing	Nursing.	$1,000.	1.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of the Bachelor of Nursing Advanced Standing degree program at the Moncton site. The recipient must demonstrate successful academic performance.	David Johnston, in memory of his wife.
ENGINEERING	Jones Geomatics Scholarship	Geodesy and Geomatics Engineering.	$500.	2.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program. Preference will be given to a student who has transferred from the Nova Scotia Community College COGS Geomatics program. Selection is based on scholastic achievement and demonstrated commitment towards becoming a registered land surveyor.	R. Kevin Jones, BScEng 1988.
COMPUTER SCIENCE	Andrew Scott Jones Memorial Scholarship	Computer Science.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student in the Faculty of Computer Science who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must be a New Brunswick resident. Selection will be based on academic achievement with preference given to a student in financial need.	Mrs. Annie Jones, in memory of her son Andrew.
ARTS	Harold E. Kane Memorial - St. Patrick's Society Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to a student at UNB Saint John who has completed at least the normal requirements for the first year of the degree program in which the student is registered and has demonstrated successful academic performance. An interest in Irish Studies may be a consideration in the awarding of the bursary.	H.E. Kane Agencies Ltd., and St. Patrick's Society.
UNRESTRICTED	Walter Wray Williams Keirstead Bursary	Unrestricted.	Variable.	Variable.	1 year.	Awarded on the basis of financial need to a student on the Saint John campus who has demonstrated successful academic performance.	The late Walter Wray Williams Keirstead.
MANAGEMENT	Kelly Family Scholarship	Business Administration.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and is enrolled in the Bachelor of Business Administration degree program and majoring or honouring in accounting. Selection is based on academic achievement. Preference will be given to a student in financial need who demonstrates a commitment to bettering the community.	Kevin Kelly (BBA 1988), Deborah Kelly (BBA 1990, BEd 1996, MEd 2010), and Jennifer Kelly (BBA 1992, BEd 1995), in honour of Thomas W. Kelly, CPA, CGA.

UNRESTRICTED	Dhanraj Persaud Khemraj Memorial Bursary	Unrestricted.	Approx. $200.	1.	1 year.	Awarded to an international graduate or undergraduate student on the Fredericton campus who has completed at least the requirements for the first year of his/her degree program and has demonstrated successful academic performance. Selection will be based on financial need.	Kay Nandlall, in memory of her father.
UNRESTRICTED	Joy Wells Kidd Bursary	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the normal requirements for the first year of the degree program in which the student is registered and has demonstrated successful academic performance.	The late Joy Wells Kidd, former Dean of Women at UNB and friends of Mrs. Kidd.
ARTS	Soren Kierkegaard Scholarship	Arts.	$5,000.	1.	1 year.	Awarded to a student who has completed the requirements for the third year of an undergraduate degree program in the Faculty of Arts in Fredericton and has declared a major or is in the honours program in philosophy. Preference will be given to students who have demonstrated academic excellence in philosophy and have an interest in existentialism and/or phenomenology.	William Elderkin, retired professor of philosophy at UNB.
UNRESTRICTED	Killam Apartment REIT Scholarship	Unrestricted.	$1,000.	2.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year an undergraduate degree program. One scholarship is to be awarded to a Fredericton campus student and one scholarship is to be awarded to a Saint John campus student. Selection is based on academic achievement.	Killam Properties.
UNRESTRICTED	Kimball & MacDonald Cystic Fibrosis Awareness Scholarship	Unrestricted.	$500.	1.	1 year.	Awarded to a student on the Fredericton campus who has completed at least the minimum requirements for the first year of an undergraduate degree program and exhibits dedication and determination despite having a medical impairment or disability. Selection will be based on academic achievement. Preference will be given to a student with Cystic Fibrosis.	The Kimball Family.
FORESTRY	Norman L. Kissick Memorial Scholarship	Forestry or Forest Engineering.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed 75 credit hours of the Bachelor of Science in Forestry degree program or 111 credit hours of the Bachelor of Science in Forest Engineering degree program and who has a demonstrated interest in forest resource management. Selection will be based on scholastic attainment and financial need.	Family and friends of Norman Kissick.
BUSINESS	Knox Family Bursary	Business.	$500.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student enrolled in Co-op in the Bachelor of Business Administration degree program. The recipient must demonstrate successful academic achievement and be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services guidelines. Preference will be given to graduates of Saint John High School. The bursary will be awarded during the student's co-op work term.	The Knox Family and the New Brunswick University Opportunities Fund.
SCIENCE	Dorothy and Kenneth Langmaid Scholarship	Science.	Variable.	1.	1 year.	Awarded to a student who has graduated from a Charlotte County High School and has completed at least the requirements for the first year of the Bachelor of Science degree program, with preference given to a student who has a major in Chemistry or Geology. Preference will also be given to a Sir James Dunn Academy graduate. Selection will be based on academic achievement with consideration given to financial need and the student's level of involvement in his/her community.	Fundy Community Foundation.

BUSINESS ADMINISTRATION	Gerald B. Lawson Memorial Scholarship	Business.	Minimum full-time tuition.	1.	1 year.	Open to students in the Faculty of Business on the Saint John Campus who have completed at least 30 credit hours in the Business degree program. The scholarship will be awarded at the end of the first 30-36 credit hours, or at the completion of a total of 60-69 credit hours in the Business degree program. Selections are made on the basis of scholastic attainment, financial need, and the contribution of the student to the university community, the Saint John community and/or the home community of the student.	Family of the late Mr. Gerald B. Lawson.
UNRESTRICTED	Gilman Leach Award for Swimming	Unrestricted.	Variable.	1.	1 year.	Awarded to a male student who is a returning member of the UNB Swim Team and demonstrates hard work and dedication to the sport of swimming. The recipient must have been awarded an AUS medal at previous swim competitions and has achieved at least a 3.0 grade point average in the previous year at UNB.	UNB Swimming Alumni.
NURSING	Charline LeBlanc Scholarship	Nursing.	Variable.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Nursing Advanced Standing program at the Moncton Campus. Selection is based on academic achievement. Consideration may be given to financial need and/or extracurricular activities.	The Estate of Charline LeBlanc.
SCIENCE or ENGINEERING	J.Vaughan LeBlanc Memorial Scholarship	Engineering or Physics.	$500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (any discipline) or the Bachelor of Science degree program and has declared a major in physics. Selection will be based on academic achievement and financial need.	David M. V. LeBlanc (BSE EE 1985).
NURSING	Irene Leckie Scholarship in Nursing	Nursing.	Variable.	6.	1 year.	Open to Fredericton campus students who have completed the requirements for the first, second or third year of the Nursing degree program. Selection will be based on academic achievement, demonstrated excellence in clinical practice, and financial need.	Irene Leckie, former Professor (1959-1983) and Dean of Nursing (1978-83).
MANAGEMENT	Irene Leckie Memorial Scholarship	Business Administration.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student who is entering the second year of the Bachelor of Business Administration degree program. Selection will be based on academic achievement and financial need. The recipient must have demonstrated leadership ability. Preference will be given to an international student.	One of the many beneficiaries of Irene's wisdom and financial generosity.
NURSING	Norman Leckie Memorial Scholarship	Nursing.	$4,000.	1.	1 year.	To be awarded annually to a student who has completed two years of study in the Faculty of Nursing. The award is to be based on competency in nursing practice, a good record of academic performance and financial need.	The Leckie Family.
MANAGEMENT	Sany Leckie Memorial Bursary	Business Administration.	$4,000.	2.	1 year.	Awarded upon the recommendation of the Faculty of Management, on the basis of financial need, to a student enrolled in the second year of the Business Administration program (BBA) on the Fredericton campus, who has demonstrated successful academic performance.	The Leckie family.
SCIENCE	Dr. Ker-Ping Lee Memorial Scholarship	Physics.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the second year of the Bachelor of Science degree program and has declared a major in Physics. The recipient must be a New Brunswick resident, according to the definition of the Provincial government's Student Financial Services Guidelines. Selection will be based on academic achievement and financial need.	Family of the late Dr. Ker-Ping Lee, who was an instructor at UNB Fredericton, and the New Brunswick University Opportunities Fund.

ENGINEERING	Dr. Y. C. Lee Memorial Scholarship	Geodesy and Geomatics Engineering.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Science in Engineering (Geomatics) degree program, who has shown special interest and promise in the study of Geographic Information Systems (GIS).	Family and friends of the late Dr. Y. C. Lee, PhD, P.Eng, who was a faculty member of the Department of Geodesy and Geomatics Engineering.
ENGINEERING	Levesque Electrical Engineering Scholarship	Electrical Engineering.	$3,000.	1.	1 year.	Awarded to a student who has completed at least the normal requirements for the first year of the Bachelor of Science in Engineering (Electrical) degree program. Selection will be based on academic achievement. Preference will be given to students from New Brunswick attending the Fredericton campus.	Michel A. Levesque (BScEng EE 1987).
ARTS	Larry Levine Scholarship	Arts or Economics.	$2,000.	1.	1 year.	Awarded annually to the most deserving Fredericton campus student in the Major A program, or the Honours program. Selection will be made on the basis of scholastic attainment.	Faculy and friends of Dr. Larry Levine, Professor Emeritus of Economics at UNB Fredericton.
ARTS	Douglas & Susan Leyden Arts Bursary	Arts.	Min. $1,000.	1 or more.	1 year.	Awarded on the basis of financial need to Saint John campus students enrolled in the Bachelor of Arts degree program who demonstrate successful academic performance. Preference will be given to 3rd and 4th year students (minimum 60 ch) majoring in English or History.	Douglas Leyden, BBA 1967 and Susan Leyden BA (History) 1985, BEd 1986.
MULTIPLE	Liberty Utilities (New Brunswick) Scholarship	Business Administration or Engineering.	$5,000.	1.	1 year.	Awarded to a student who has completed the requirements for the second or third year for the Bachelor of Business Administration or the Bachelor of Science in Engineering degree programs. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines and may also be offered summer employment withLiberty Utilities (New Brunswick). Selection will be based on scholastic achievement (minimum 3.5 gpa is required) as well as suitability for employment with Liberty Utilities (New Brunswick). A shortlist of candidates will be provided to Liberty Utilities (New Brunswick) for review and input.	Liberty Utilities (New Brunswick).
ARTS	Dr. Henry Llambias Memorial Scholarship	Arts.	Variable.	1.	1 year.	Open to students in the Faculty of Arts on the Fredericton Campus who have completed at least the normal requirements at UNB for the first year of the Bachelor of Arts degree program, including those students who are registered in a concurrent BA degree program. Candidates must be members of the UNB Residence Community at the time of scholarship selection, and during the tenure of the scholarship. Selections are made on the basis of academic performance and financial need.	Family and friends of the late Dr. Henry Llambias, former Professor of Political Sciences, Dean of Men's Residence 1981-82 and Don of Jones House 1982-91.
NURSING	Betty C. Lockhart Scholarship	Nursing.	$2,000.	1.	1 year.	Awarded to a student from Atlantic Canada who has completed at least the minimum requirements for the second year of the Bachelor of Nursing. Selection will be based on academic achievement. Preference will be given to a student who demonstrates financial need.	The family of Betty C. Lockhart.
UNRESTRICTED	Marjorie Barberie Logue CFUW Scholarship	Unrestricted.	$3,500.	3.	1 year.	Open to female Fredericton campus students with a minimum Scholarship GPA of 3.7 who have completed at least the normal requirements for the first year of an undergraduate degree program in which the student is registered at the University. The recipients must be New Brunswick residents, as defined by Student Financial Services. Financial need is an important consideration.	Canadian Federation of University Women-Fredericton and the New Brunswick University Opportunities Fund.

ENGINEERING	Woodrow P. London Scholarship	Civil, Electrical, or Mechanical Engineering.	$2,000.	1.	1 year.	Selection is made on the basis of scholastic attainment and financial need.	W. P. London and Associates Limited, as well as friends, in honour of Mr. Woodrow P. London.
FORESTRY	H. Douglas Long Memorial Scholarship	Forestry.	Variable.	Multiple.	1 year.	Awarded to a student entering the penultimate or the final year of the program leading to the degree of Bachelor of Science in Forestry, who has shown special interest and promise in the silvicultural aspects of forest management.	Contributors to the University Faculty Fund.
MANAGEMENT	Carl & Dorothy Loughrey Scholarship	Business Administration.	$3,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Business Administration degree program and has declared a major in Finance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Dorothy Loughrey and the New Brunswick University Opportunities Fund.
ENGINEERING	Dr. Ian R. Lowe Memorial Scholarship	Mechanical Engineering.	Variable.	Variable.	1 year.	Awarded to a student who has completed at UNB the minimum requirements for the first year of the BScME degree program. Selection will be made on the basis of scholastic attainment.	Mrs. Joyce M. Lowe.
ARTS	Stuart and Richard Lowerison Memorial Scholarship	Arts.	Variable.	Variable.	1 year.	Open to undergraduate students on the Fredericton campus in the Faculty of Arts who have completed at least the normal requirements for first year of the Arts degree program at UNB and have demonstrated excellence in at least 6 ch in English, History or French.	The late Stuart Lowerison.
EDUCATION	A. B. Lumsden Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student in the Bachelor of Education degree program who has completed a Bachelor of Business Administration degree and is a graduate of a New Brunswick high school. Selection is based on academic achievement.	Friends of the late A.B. Lumsden.
MULTIPLE	Roland J. Lutes, C.A. Memorial Scholarship	Business Administration.	$8,000.	1.	1 year.	Awarded to a student who has completed at least the requirements of the first year of the Bachelor of Business Administration degree program. Selection will be based on scholastic attainment and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family and friends of Rollie J. Lutes, BBA 1958, and the New Brunswick University Opportunities Fund.
SCIENCE	Dr. C. Lutze-Wallace Scholarship	Chemistry, Biology/Chemistry, or Medical Laboratory Science.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has graduated from a New Brunswick high school and has completed the normal requirements for the first year of the Bachelor of Science degree program demonstrating excellence in the Chemistry or Biology/Chemistry fields, or is enrolled in the Bachelor of Medical Laboratory Science. Selection will be made on scholastic attainment and financial need.	Dr. Cyril Lutze-Wallace, BSc. '82, PhD '88 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Josephine Lynam Scholarship	Unrestricted.	$11,250.	2.	1 year.	Awarded to a female student aged 25 years or older who has completed the requirements for the second year of an undergraduate degree program and is beginning her third year as a full-time student. The recipient must be a resident of New Brunswick according to the NB Provincial Government Student Financial Services guidelines. Selection will be based on academic achievement and financial need. Preference will be given to a single parent.	Josephine Lynam, Class of 1941 and the New Brunswick University Opportunities Fund.
MULTIPLE	Hulda A. Lynds Memorial Scholarship	Education.	Up to $1,000.	1 or more.	1 year.	Awarded to a student who is a resident of Albert County or a graduate of an Albert County high school and who is enrolled in the Bachelor of Education (consecutive or concurrent) degree program. Selection is based on academic achievement.	The late Eleanor B. Lynds.

UNRESTRICTED	Don MacAdam Award in Men's Hockey	Unrestricted.	Not to exceed tuition and compulsory fees.	1 or more.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program and is a member of the UNB Reds men's hockey team. Graduate students are also eligible. The successful recipient must possess a high level of physical fitness, have an outstanding work ethic, be community-minded and a team leader on and off the ice. The recipient must have demonstrated successful academic performance (minimum 2.0 scholarship grade point average, as per U SPORTS regulations).	Alumni of the 1983-84 UNB men's hockey team.
MULTIPLE	Bev and Althea Macaulay Scholarship	Arts, Engineering, Forestry, or Science.	Approx. $900.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Arts, Bachelor of Science in Engineering, Bachelor of Science in Forestry, or Bachelor of Science degree program. Selection will be based on scholastic attainment and financial need. The recipient must be a resident of New Brunswick as defined by the Provincial Government's Student Financial Services.	Dr. Beverley F. Macaulay, BScE 1928, DSC 1974, UNB Vice-President of Administration from 1960 to 1972 and Dr. Althea Warren Macaulay, BA 1939, LLD 1990, who taught in the Faculty of Science from 1942 to 1945 and from 1951 to 1958. A donation was also received from the New Brunswick Universities Opportunity Fund.
NURSING	MacDonald Scholarship in Nursing	Nursing.	Variable.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the second year of the Bachelor of Nursing degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Barbara MacDonald (BBA 1978) in memory of her father. Support has also been provided by the New Brunswick University Opportunities Fund.
EDUCATION	Margaret Macdougall Bursary in Education	Education.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student in the Bachelor of Education degree program. Preference will be given to a student who has completed a Bachelor of Business Administration degree. The recipient must demonstrate successful academic performance.	The Business Education Subject Council, in honour of Prof. Margaret Macdougall.
ENGINEERING	Donald MacFadyen BScSE Memorial Scholarship	Geodesy and Geomatics Engineering.	$2,250.	1.	1 year.	Awarded to a student from the Maritime Provinces who is entering their final year in the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program. The recipient who has at least a B- average will be selected on the basis of financial need, involvement in student and community activities.	Jean, Malcolm, family and friends of the late Donald MacFadyen.

EDUCATION	Helen MacFarlane Scholarship	Education.	$1,200.	2.	1 year.	Awarded to a student enrolled in the Bachelor of Education degree program on the Fredericton campus. Selection will be based on academic achievement. Preference will be given to a student who demonstrates an interest in Reading/Language Arts.	Friends of Helen MacFarlane, in honor of her outstanding contribution to Education.
MULTIPLE	MacFarlane-Reid Scholarship	Unrestricted and Science.	Variable.	4.	1 year.	Awarded to Fredericton campus students who have successfully completed the requirements for the first two years of an undergraduate degree program. Two scholarships are awarded to students who are graduates of a Fredericton high school and are enrolled in the Bachelor of Science degree program. Two scholarships are awarded to students who are graduates of a high school in Kings County, New Brunswick with preference given to residents of Norton, Bloomfield or Southfield, and are enrolled in any undergraduate degree program. Selections are made on the basis of academic performance.	Edith MacFarlane Reid BSc 1946 UNB and Jamie M. Reid Class of 1951 in memory of E. Leslie Class of 1919 and Leona Tracy MacFarlane and Ivan W. and Gladys Allaby Reid.
BUSINESS ADMINISTRATION	Alan MacGibbon Scholarship	Business Administration.	$5,000.	3.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of the Bachelor of Business Administration undergraduate degree program. Selection will be based on academic achievement and financial need.	Alan MacGibbon (BBA 1978, DLitt 2010).
ARTS	Neil MacGill Scholarship in Philosophy	Arts.	$6,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of a Bachelor of Arts or a Bachelor of Arts and Science, and who has declared a Major in Philosophy or has been admitted to the Philosophy Honours program. Selection is made on the basis of academic achievement.	The Late Professor Neil MacGill.
FORESTRY	Hon. Elmer MacKay Scholarship in Forestry	Forestry or Forest Engineering.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment to a Fredericton campus student from the Atlantic provinces who has completed the normal requirements at UNB for the first year of the Forestry degree program.	Staff and friends of the Hon. Elmer MacKay.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Dr. Deborah A. Mackay-Mitton Memorial Scholarship	Science.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment to a UNB female student on the Saint John campus who has completed at UNB the minimum requirements for the first year of the Bachelor of Science degree program. Community involvement will be a consideration in the selection process.	The Saint John Branch of the Federation of Medical Women, Friends and Colleagues of the late Dr. Deborah Mackay-Mitton.
UNRESTRICTED	Dr. Norman A. M. MacKenzie Scholarship	Unrestricted.	$200.	1.	1 year.	Selections are made on the basis of scholastic attainment and financial need.	Associated Alumni, University of New Brunswick and University of British Columbia Alumni Association.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Eleanor Grace (Vincent) MacKenzie Memorial Bursary	Nursing.	$1,250.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the second year of the Bachelor of Nursing degree program. The recipient must demonstrate successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	The family of Eleanor MacKenzie and the New Brunswick University Opportunities Fund.

COMPUTER SCIENCE	MacLauchlan McKenzie Scholarship: Women in Technology	Computer Science.	$3,500.	2.	1 year.	Open to Fredericton campus female students who have completed at least the normal requirements for the first year of an undergraduate degree program in the Faculty of Computer Science and will attend the Fredericton campus during the tenure of the scholarship. Selections are made on the basis of scholastic attainment and financial need.	Julia MacLauchlan and Warren McKenzie.
UNRESTRICTED	MacLauchlan McKenzie Student Leadership Scholarship	Unrestricted.	$3,000.	1.	1 year.	Open to a full or part-time student enrolled on the Fredericton campus in an undergraduate degree program who has completed at least the normal requirements for the first year of the degree program in which the student is registered and will attend the Fredericton campus during the tenure of the scholarship. Recipient must be a student in a leadership position in student organizations that would involve the entire student body, such as student government, The Brunswickan, CHSR, etc. The selection is made on the basis of scholastic attainment and financial need.	Julia MacLauchlan and Warren McKenzie.
NURSING	Miss A.J. MacMaster School of Nursing Scholarship	Nursing.	Variable.	1.	1 year.	Awarded annually to a student entering the second year of the Bachelor of Nursing Advanced Standing degree program at the Moncton site who has demonstrated clinical proficiency. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on scholastic attainment and financial need.	The Board of Trustees, The Miss A. J. MacMaster School of Nursing and the New Brunswick University Opportunities Fund.
NURSING	Allison MacMillan Bursary in Nursing	Nursing.	$5,000.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in the Bachelor of Nursing Advanced Standing degree program. The recipient must have demonstrated successful academic performance and excellence in nursing practice.	Allison MacMillan.
ENGINEERING	E. Nelson Macnab Memorial Scholarship	Engineering.	Variable.	1 or more.	1 year.	Awarded to students who have completed at least the minimum requirements of the first year of the Bachelor of Science in Engineering degree program. Selection will be based on scholastic achievement and financial need. Preference will be given to students who demonstrate an interest in sports.	The family of E. Nelson Macnab, BScEng 1943.
UNRESTRICTED	David and Hughena Macneil Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is made on the basis of academic achievement and financial need.	David & Hughena Macneil and the New Brunswick University Opportunities Fund.
ENGINEERING	Malcolm and Lorna MacNeil Scholarship	Engineering.	$2,000.	1.	1 year.	Awarded to a student from the Maritime Provinces who has completed at least the minimum requirements for second year of the Bachelor of Science in Engineering (any discipline). Selection is based on academic achievement and financial need.	Malcolm and Lorna MacNeil
BUSINESS ADMINISTRATION	Ed and Muriel Maher Scholarship	Business Administration.	$2,500.	2.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student continuing beyond first year (30 ch) in the BBA program.	Students, faculty, staff, graduates, organizations and friends in recognition of Professor E.D. Maher's many contributions to the University and, in particular, to the

							undergraduate business program.
MULTIPLE	Major Drilling Group Scholarship	Earth Sciences or Geological Engineering.	$2,000.	2.	1 year.	Awarded to a Fredericton campus student who is in the third year of the Bachelor of Science with a major in Earth Sciences or the Bachelor of Science in Engineering (Geological). Selection is based on scholastic achievement.	Major Drilling International.
MANAGEMENT	A.J. Malley Memorial Scholarship	Business Administration.	Approx. $1,500.	1.	1 year.	Awarded to an outstanding Fredericton campus student who has completed the third year of the Bachelor of Business Administration degree program at UNB. Preference will be given to a student who has enrolled in entrepreneurship courses. Selection is made on the basis of academic performance and financial need. The recipient must be a New Brunswick resident as defined by the Provincial Government's Student Financial Services.	The family of A.J. Malley and the New Brunswick University Opportunities Fund.
MULTIPLE	Henri and Jeannette Marcotte Memorial Scholarship	Economics or Education.	$800.	1.	1 year.	Awarded to a student who has completed at least the requirements for the second or third year of the Bachelor of Arts or the Bachelor of Business Administration and has declared a major in Economics. Students enrolled in the Bachelor of Education degree program may also be considered. Selection is based on scholastic attainment.	The estate of Jeannette E. Marcotte.
ENGINEERING	Maritimes & Northeast Pipeline Scholarship in Engineering	Civil, Chemical, or Mechanical Engineering.	$5,000.	1.	1 year.	Awarded to students who have completed at least the requirements for the first year of the Civil, Chemical or Mechanical Engineering degree program. Selection will be based on academic achievement.	Maritimes & Northeast Pipeline
MULTIPLE	William L. Barrett Engineering and GeoScience Scholarship	Engineering or Earth Science.	$1,000.	1.	1 year.	To be awarded annually to a student in the Engineering or Earth Sciences (GeoScience) program at UNB on the Fredericton campus who has successfully completed one year of student (a minimum of 35 ch) leading to the degree of Bachelor of Science in Engineering or Earth Sciences. Preference will be given to students who have graduated from a high school within the City of Fredericton.	APEGNB Fredericton Branch.
SCIENCE	A.L. McAllister Scholarship	Applied Earth Sciences.	Approx. $2,500.	1.	1 year.	Open to students entering their final year of the undergraduate Earth Sciences degree program. Selection will be made on the basis of scholastic attainment and involvement in extracurricular activities.	Friends, students and colleagues in honour of Dr. Arnie McAllister on the occasion of his retirement.
SCIENCE	Michael (Mike) McAloon Memorial Scholarship in Physics	Physics.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree and has declared a Major in Physics. Selection is based on academic achievement.	Family and friends of the late Mike McAloon, BSc 2007.
ENGINEERING	J. Nairn McCaffrey Memorial Scholarship	Civil Engineering.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to Civil Engineering students.	The late Catherine Phyllis McCaffrey.
SCIENCE	John J. McCaffrey Scholarship	Biology.	Variable.	Variable.	1 year.	Awarded primarily on the basis of academic performance to students in the Science degree program who have demonstrated excellence in at least nine credit hours in Biology.	The late Catherine Phyllis McCaffrey.

UNRESTRICTED	Mark McClare Memorial Bursary	Unrestricted.	Min. $1,000.	Variable.	1 year.	Awarded to a graduate of a New Brunswick High School who has completed at least the first year of an undergraduate degree program at UNB. Selection will be based on financial need as well as a demonstration of successful academic performance. Preference will be given to a student who exhibits dedication and determination despite having a medical impairment or disability. Consideration may be given to a student who has volunteer experience or extra-curricular activities.	Family of Mark McClare, BA 1986 and the New Brunswick University Opportunities Fund.
EDUCATION	Sheri Lynne McCordick Memorial Bursary	Education.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student enrolled in the Bachelor of Education degree program. The recipient must demonstrate successful academic performance.	Family and friends of the late Sheri Lynne McCordick, a former UNB student.
FORESTRY	McCormack Scholarship in Forestry	Forestry.	$1,000.	1.	1 year.	Awarded to a student who has graduated or is transferring from the Maritime College of Forest Technology into a degree program in the Faculty of Forestry and Environmental Management. Selection is based on academic achievement and financial need. Preference will be given to a student from Atlantic Canada.	Donald McCormack.
RENAISSANCE COLLEGE	Debra A. McDonough Memorial International Internship	Philosophy in Interdisciplinary Leadership.	Variable.	1 or more.	1 year.	Awarded to a student who has completed at least the requirements for the first year of the Bachelor of Philosophy in Leadership Studies. Selection is based on academic achievement. The award is to be held during the student's international internship.	Guy Presse, family and friends of Debra McDonough Presse
EDUCATION	Mary (Née Outlet) McDougall Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who has a physical disability on the Fredericton campus on the basis of scholastic attainment and financial need. Preference given to Education students.	Family and friends of the late Mary McDougall, a former UNB Education student.
ENGINEERING	McElhanney Geomatics Engineering Ltd. Scholarship	Geodesy and Geomatics Engineering.	$2,500.	1.	1 year.	Awarded to a Geodesy and Geomatics Engineering student who has completed or has enrolled in the two cadastral surveying option courses: GGE5522 Survey Law II and GGE5833 Land Use Planning for Geomatics. Selection will be based on academic achievement (minimum 3.2 scholarship gpa). Demonstrated leadership ability and innovative skills will also be taken into consideration in selecting the recipient for this award.	McElhanney Geomatics Engineering Ltd.
ENGINEERING	Professor Howard McFarlane Bursary	Civil Engineering.	$3,500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program and is a graduate of a New Brunswick high school. Preference will be given to a student specializing in Soils Mechanics. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines, and demonstrate successful academic performance.	
ARTS	Peter McGahan Memorial Scholarship	Arts.	$4,000.	1.	1 year.	Awarded to a full-time or part-time student on the Saint John campus who is enrolled in the Faculty of Arts, and has achieved a high academic standing after 60 credit hours of study. The student should have demonstrated in his/her course selection a desire to explore as many disciplines as possible at the lower level. This reflects the philosophy of Peter McGahan that students in the first two years of a BA degree should diversify rather than specialize.	Faculty, staff, family and friends of the late Peter McGahan.

NURSING	Arlee Hoyt McGee Nursing Scholarship	Nursing.	$2,000.	1.	1 year.	Open to Nursing students at any of the three University of New Brunswick sites who are graduates of a New Brunswick high school and have completed at least the minimum requirements for the first year of a Nursing degree program. Selection will be based on academic achievement and financial need.	Family and friends of the late Arlee Hoyt McGee and the New Brunswick University Opportunities Fund.
ARTS	Rose May and Reta Mae McGee Memorial Scholarship	Arts.	$3,000.	1.	1 year.	Open to Fredericton campus students enrolled in the Bachelor of Arts program. Preference will be given to a student enrolled in one or more subjects in the humanities and languages disciplines. Selection will be based on scholastic attainment and financial need.	Robert Harley McGee.
FORESTRY	Steven McGill Memorial Scholarship	Forestry and Environmental Management.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the second year of an undergraduate degree program in the Faculty of Forestry and Environmental Management. Preference will be given first to a student from outside the Maritimes and then to a student from outside New Brunswick. Selection is based on academic achievement.	The Family of Steven McGill.
NURSING	Penny McIlwaine Scholarship in Nursing	Nursing.	$1,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements of the first year of the Bachelor of Nursing degree program. The recipient must be a New Brunswick resident, according to the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Penny McIlwaine (BN 1963) and the New Brunswick University Opportunities Fund.
EDUCATION	Mark McIntyre-Kelly Memorial Scholarship	Education.	$400.	1.	1 year.	Awarded to a Fredericton campus student admitted to the Bachelor of Education degree program. Selection is based on scholastic attainment and financial need.	The family of Mark McIntyre-Kelly.
ARTS	Mary McKean English Student Award	English.	$300.	1.	1 year.	Awarded to a Saint John campus student who is majoring in English, in either honours, single majors or double majors and who, in addition to his or her academic achievement, has contributed to the life of the English discipline and has taken a leadership role among his or her peers in order to improve the general educational and arts experience of the student body. Part-time students may be considered for this award.	The estate of Mary McKean.
ARTS	Mary McKean Scholarships for Upper Level Students in English	English.	$300.	Up to 10.	1 year.	Awarded to Saint John campus students who are majoring in English, in either the honours, single majors, or double majors program, and who have completed 75 ch (or 25 courses) of their degree program. Part-time students may be considered for this award. Selection will be made on the basis of scholastic attainment.	The estate of Mary McKean.
ENGINEERING	H. E. McKeen Scholarship	Engineering.	$1,500.	Multiple.	1 year.	Awarded to students enrolled in any discipline of the Bachelor of Science in Engineering. Selection will be based on academic achievement and financial need.	The McKeen Foundation.
ENGINEERING	Roger McKenzie Scholarship	Chemical, Mechanical or Electrical Engineering.	$2,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Chemical, Mechanical or Electrical) degree program. Selection will be based on academic achievement. The recipients must demonstrate a solid aptitude and interest in the field of nuclear engineering.	Organization of Canadian Nuclear Industries (OCNI).
UNRESTRICTED	McLaughlin Family Bursary	Unrestricted.	$5,000.	3 or more.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program and demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Friends and colleagues of UNB Past-President Dr. John D. McLaughlin and the New Brunswick University

							Opportunities Fund.
EDUCATION	Cathy Mead McCabe Scholarship	Education.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Education degree program. Selection will be based on academic achievement. Preference will be given to a student who demonstrates strong interest in educating children.	John McCabe (BA 1969, BPE 1967).
ENGINEERING	Midwest Surveys Scholarship	Geodesy and Geomatics Engineering.	$2,000.	1.	1 year.	Awarded to a student who is in the final year of the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program and has demonstrated an interest in cadastral studies. Selection is based on academic achievement and demonstrated leadership.	Midwest Surveys.
MANAGEMENT	Brydone deBlois Millidge Memorial Scholarship	Business Administration.	Up to $1,000.	1.	1 year (may be renewed).	Awarded on the basis of scholastic attainment and financial need to a BBA student on the Fredericton campus who has completed at least one year (minimum 30 ch) of the Business degree program.	The late Mrs. Brydone deBlois Millidge.
COMPUTER SCIENCE	Andrea Mills Computer Science Co-op Scholarship	Computer Science.	$1,000.	2.	1 year.	Awarded to students enrolled in an undergraduate degree program in the Faculty of Computer Science who have completed at least one successful co-op work term. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is made on the basis of academic achievement and financial need. One scholarship will be awarded to a male and one scholarship will be awarded to a female.	Andrea Mills (BScCS 1985, BBA 1986) and the New Brunswick University Opportunities Fund.
NURSING, SASE	Miramichi Hospital School of Nursing Alumnae Scholarship	Nursing.	$500.	1.	1 year.	Awarded to a student who has completed the requirements for the first year of the Bachelor of Nursing degree program. Selection will be based on academic achievement. Consideration may be given to financial need. The recipient must be a graduate of one of the following high schools: Miramichi Valley, James M. Hill, North and South Esk or Blackville.	The Miramichi Hospital School of Nursing Alumnae.
MULTIPLE	Gary F. Mitton Scholarship in Civil Engineering	Civil Engineering.	$10,000.	1 or more.	1 year (may be renewed).	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil) degree program. The recipient must be a New Brunswick resident, according to the definition of the of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. Preference will be given to a graduate of Moncton High School.	Gary F. Mitton, BScEng (Civil) 1974 and the New Brunswick University Opportunities Fund.
NURSING	Rachel Moffatt Memorial Scholarship	Nursing.	Variable.	1.	1 year.	To be given annually to a student who has completed a minimum of one academic year in the Nursing program. Demonstrated excellence in nursing practice, active participation in the Nursing Society, and financial need will be the criteria of the award. Preference will be given to students resident in New Brunswick.	The Nursing Society of the University of New Brunswick in memory of Rachel Moffat who died March 16, 1979.
UNRESTRICTED	Mombourquette Family Basketball Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program and has demonstrated special athletic ability in the sport of men's varsity basketball. The recipient must have achieved at least a 2.0 grade point average, as per U SPORTS regulations.	Dr. Amber Andrews and Kirt Mombourquette (BEd 2002).

UNRESTRICTED	Susan G. Montague Bursary	Unrestricted.	$4,500.	1 or more.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program and demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Friends and colleagues of Susan G. Montague, former Director of Development and Donor Relations (1987-2006) and the New Brunswick University Opportunities Fund.
MANAGEMENT	Kenneth D. Moore Memorial Scholarship	Business Administration.	Approx. $500.	1.	1 year.	Awarded annually on the basis of academic performance and financial need to a student entering the second year (completed 30 ch) of the BBA degree program on the Fredericton campus.	Canadian Retail Shippers' Association.
UNRESTRICTED	Florence L. Murray Memorial Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Open to a student who has completed at least the normal requirements for the first year of the program in which he/she is registered at the University.	The late Alexander Ronald Murray.
ARTS	Jack Murray Memorial Scholarship	Arts.	Approx. $1,500.	1.	1 year.	Awarded to a student who has completed a minimum of 60 credit hours at UNB in the Faculty of Arts degree program and has made a contribution to student life at the University.	Family and friends of the late Jack Murray.
EDUCATION	Luz Murray Memorial Scholarship in Music Education	Education.	Min. $1,200.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Education degree program. Selection will be based on academic achievement. Preference will be given to a student who has demonstrated excellence in the study of music education.	Mr. Bruce Murray, in memory of his wife, Luz.
EDUCATION	NB Society of Retired Teachers SJ - Education Scholarship	Education.	Min. $1,500.	1.	1 year.	Awarded to a Saint John campus student who has completed the requirements for the second year of the Bachelor of Arts/Bachelor of Education degree program. The recipient must be a graduate of Saint John High School, Saint Malachy's Memorial High School, Harbour View High School or Simonds High School. The recipient must also be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection will be based on academic achievement and financial need.	New Brunswick Society of Retired Teachers, Saint John Branch and the New Brunswick University Opportunities Fund.
ENGINEERING	Neill and Gunter Scholarship	Engineering.	$3,000.	2.	1 year.	Awarded to Fredericton campus students (1 male and 1 female) who have completed the minimum requirements for the first year of the Bachelor of Science in Engineering degree program. Selection will be based on scholastic attainment.	Neill and Gunter.
SCIENCE	New Brunswick Dental Society Scholarship	Science.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program and intends to continue his/her studies in the field of dentistry after graduation. Selection is based on scholastic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	New Brunswick Dental Society and the New Brunswick University Opportunities Fund.
MULTIPLE	New Brunswick School Trustees Association Scholarship	Education, Kinesiology, or Nursing.	Variable.	1.	1 year.	Awarded to a student who is a graduate of a New Brunswick High School and is entering the final year of an undergraduate degree program in Education, Kinesiology or Nursing. Selection will be based on academic achievement, financial need and involvement with children in a paid or volunteer capacity. The recipient must be a New Brunswick resident, according to NB Students Financial Services guidelines.	New Brunswick School Trustees Association and New Brunswick University Opportunities Fund.

FORESTRY	NewPage Port Hawkesbury Exchange Scholarship	Forestry.	$2,500.	1.	1 year.	Open to Fredericton campus students enrolled in the Bachelor of Science in Forestry degree program who are participating in an exchange program. Selection is made on the basis of scholastic attainment. Preference will be given to students from Nova Scotia who will be participating in an exchange program with the Faculty of Forestry at the Swedish University of Agricultural Sciences.	NewPage Port Hawkesbury Limited.
FORESTRY	NewPage Port Hawkesbury Scholarship	Forestry or Forest Engineering.	Approx. $750.	3.	1 year.	Open to graduates of a Nova Scotia high school who have completed at least the requirements for the first year of the Forestry or Forest Engineering program at UNB. Selections are made on the basis of scholastic attainment and financial need.	NewPage Port Hawkesbury Limited.
MULTIPLE	Herbert and Phyllis Northcott Scholarship	Science.	$1,000.	1.	1 year.	Awarded to a student who has completed at least minimum requirements for first year of the Bachelor of Science degree program. Preference will be given to a student who has declared a major in chemistry. Selection based on academic achievement, with consideration given to financial need.	Colleen Northcott (BSC 1977, PHD 1983)
NURSING	Nursing Alumni Scholarship	Nursing.	Variable.	1.	1 year.	To be given annually to a student entering the junior or senior year of the basic degree program in the Faculty of Nursing. Demonstrated leadership skills, scholastic attainment, and financial need will be the criteria of the award.	UNB Nursing Alumni.
UNRESTRICTED	Odrowski Family Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student enrolled in an undergraduate degree program, who has completed at least the minimum requirements for the first year of their program. The recipient must demonstrate an interest in healthcare or healthcare research. Selection is based on academic achievement with consideration given to financial need and/or extracurricular activities.	Jeff Odrowski (BA 1997), in memory of Lori and Mary Odrowski.
UNRESTRICTED	Ottawa Alumni Chapter Thomas Foulkes Sr. Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student who has completed at least the normal requirements for the first year of the program in which the student is registered at the University. Eligible candidates must be residents from any point in Ontario east of a Deep River-Gananoque line, and areas of Quebec bordering the Ottawa River from Davidson to Grenville. Consideration will be given to participation in extracurricular activities.	Ottawa Chapter, UNB Alumni.
NURSING	Joe and Deb Owens Nursing Scholarship	Nursing.	$7,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the second year of the Bachelor of Nursing degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Joseph (BSE CE 1972) and Deborah (Merrithew) (BEd 1978) Owens and the New Brunswick University Opportunities Fund.
MULTIPLE	Joe and Deb Owens Science & Engineering Scholarship	Science or Engineering.	Tuition.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the second year of the Bachelor of Science or the Bachelor of Science in Engineering degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines.	Joseph (BSE CE 1972) and Deborah (Merrithew) (BEd 1978) Owens and the New Brunswick University Opportunities Fund.
ARTS	Dr. Richard Papenhausen Bursary for English Students	English.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who is a New Brunswick resident, according to the definition used by Student Financial Services. The recipient must have declared a major or	Friends and Family of the late Dr. Richard Papenhausen, Director of Student

						honors in English and achieved at least a 2.5 scholarship grade point average in the previous year of study.	Life and Support Services UNBSJ from 1982 to 2003, and the New Brunswick University Opportunities Fund.
SCIENCE	Loree Bremner Papp Memorial Scholarship in Science	Science.	$4,000.	1.	1 year.	Awarded to a female student on the Fredericton campus who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program. The recipient must have declared a major in biology and be from New Brunswick, Scotland or Hungary. Selection will be based on academic achievement and financial need.	Dr. Otto Papp in honour of his wife Loree Bremner Papp (BSc 1960).
EDUCATION	Mabel Parker Bursary	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Education degree program who has demonstrated satisfactory academic performance. The recipient must have a demonstrated interest in dealing with children who have learning disabilities or who are mentally challenged. Preference will be given to graduates of a Charlotte County high school.	St. Stephen and District Association for Community Living.
EDUCATION	Ronald Edward Parks and Sophia Arlene Parks Scholarship	Education.	$2,500.	2.	1 year.	Awarded to students in the Bachelor of Education program on the Fredericton Campus. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Ronald Edward Parks, Sophia Arlene Parks, BT'72, BEd'74, MEd'83, and the New Brunswick University Opportunities Fund.
MULTIPLE	Theodore 'Ted' Parsons Memorial Scholarship	Civil or Geological Engineering.	$2,500.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil or Geological). Selection is based on academic achievement.	Gemtec.
SCIENCE, APPLIED SCIENCE & ENGINEERING	David J.S. Patel Memorial Scholarship	Science.	Variable.	1.	1 year.	Open to students in Science on the Saint John campus who have completed at least the normal requirements for the first year of the program in which they are registered.	Family and friends of the late David Patel.
EDUCATION	Dr. & Mrs. Fletcher Peacock Scholarship in Education	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who is in the Bachelor of Education degree program and is intending to pursue studies in the area of people who are physically and/or mentally challenged. Selection is based on academic achievement.	Mrs. Jessie W. Sharpe.
MULTIPLE	Ronald G. Pearce Memorial Bursary	Science.	Variable.	1.	1 year.	Awarded on the basis of financial need to a Saint John campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program. The recipient must be pursuing a major or honours in Biology-Psychology and demonstrate successful academic achievement.	The scholarship is in memory of Ronald G. Pearce, who graduated in Electrical Engineering at UNB in 1962. Throughout his life, Ron had an interest in the arts, photography, music and travel, as well as engineering.
NURSING, SASE	Dr. Robert M. Pendrigh Scholarship	Nursing.	Approx. $1,150.	1.	1 year.	Open to a student entering the senior year in either the Basic or Post R.N. Nursing program, with high marks in Nursing courses for the previous two years of study. Financial need will be a criterion in making the award.	The late Dr. Robert M. Pendrigh.

NURSING	Dr. Carolyn Pepler Scholarship	Nursing.	$1,000.	1.	1 year.	Awarded to a student entering the second year of the Bachelor of Nursing degree program. Selection is based on academic achievement and clinical performance during their first year. This award will rotate between the Fredericton and Saint John campuses.	Dr. Carolyn Pepler
NURSING	Margaret Jean (Scott) Peters Memorial Scholarship	Nursing.	Variable.	Variable.	1 year.	Open to students who have completed at least the requirements for the first year of the Bachelor of Nursing degree program. Selection is based on scholastic attainment and demonstrated excellence in nursing practice.	Mr. Douglas B. Peters.
SCIENCE	Ethel and Watson Peterson Memorial Scholarship	Science.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program. Selection is based on academic achievement and financial need.	Watson Peterson (BSc 1948) in memory of his parents.
ARTS	Ina & Ray Peterson Memorial Scholarship	Arts or Education.	$1,000.	1.	1 year.	Awarded to female students who have graduated from a New Brunswick high school and are entering the third or fourth year of the concurrent Bachelor of Arts/Bachelor of Education degree program on the Saint John Campus. Preference will be given to students from Fredericton Junction/Sunbury County, N.B. Selection is based on academic achievement and financial need.	E. Sarah Peterson (BA 1948, MEd) and immediate family.
ENG, SCIENCE, SASE	Ben Pickett Memorial Bursary	Science or Engineering.	Min $1,000.	4.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of a Bachelor of Science or Bachelor of Science in Engineering (any discipline) degree program. The recipient must be from Atlantic Canada and demonstrate successful academic performance.	Bob (BSc CE 1961, MSc CE 1963) and Barbara Pickett.
ENGINEERING	Dr. Jules J.C. Picot Scholarship	Chemical Engineering.	$1000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Chemical) degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Established by Dr. Varagur S.V. Rajan (Ph.D. CHE 1970) and supported by alumni, colleagues, friends and the New Brunswick University Opportunities Fund in recognition of Jules Picot's many contributions to the University.
EDUCATION	Ernest & Blanche LeBel Picot Scholarship	Education.	Variable.	Variable.	1 year.	Awarded to students enrolled in the Bachelor of Education program on the Fredericton campus. Selection will be based on academic achievement. Preference will be given to students who have demonstrated an interest in French.	The late Dr. J.E. Picot (and his family).
UNRESTRICTED	Rod Pike Award in Men's Hockey	Unrestricted.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the normal requirements for the first year of an undergraduate degree program and is returning to UNB in the fall. The recipient must be a player on the UNB Reds men's hockey team, have demonstrated a special athletic ability in the sport of men's hockey at UNB and have successful academic performance (minimum 3.0 scholarship grade point average).	Friends and Family of Rod Pike (BBA 1980)
ENGINEERING	Dr. Douglas G. Pincock Electrical Engineering Scholarship	Electrical Engineering.	$5,000.	1.	1 year.	Awarded to a Fredericton campus student who is entering the third or fourth year of study in the Bachelor of Engineering (Electrical) degree program. Selection will be based on academic achievement. Preference will be given to a student who is involved in extracurricular activities.	AMIRIX Systems Inc.

ENGINEERING	David Kent Plummer Memorial Scholarship	Electrical Engineering.	$1,000.	1.	1 year.	Awarded to a student who has completed the requirements for the first year of the Bachelor of Science in Engineering (Electrical) and is beginning second year. Preference will be given to a graduate of Saint John High School. Selection will be based on scholastic attainment and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Arthur Plummer and the New Brunswick University Opportunities Fund.
ARTS	Fernando Poyatos Scholarship	Arts.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who is in the honours program in Anthropology, Psychology or Sociology. Selection will be based on academic attainment and financial need.	Fernando Poyatos, UNB Professor Emeritus, has donated his portion of the proceeds from the book "Impressions of Historic Fredericton" to establish this award.
MANAGEMENT	Dipendra P. Pradhan Scholarship	Business Administration.	Variable.	1.	1 year.	Awarded to a student on the Fredericton campus who has completed the requirements of the first year of the Bachelor of Business Administration degree program and is beginning second year. Selection is based on academic achievement and financial need.	Dipendra P. Pradhan, BBA 2011.
SCIENCE, APPLIED SCIENCE AND ENGINEERING	Dr. Francis H. Premdas Memorial Scholarship	Biology.	$1,000.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree and has declared a major in the biology discipline. Selection is based on academic achievement.	Family of Dr. F. H. Premdas, who taught Biology on the Saint John campus for nearly 30 years.
MULTIPLE	Frank & Isa Pridham Memorial Scholarship	Unrestricted.	$3,000.	7.	1 year.	Open to Fredericton campus students who have completed at least the normal requirements for the first year of the degree program in which they are registered at UNB. Preference may be given to residents of Fredericton, NB and to students in the Arts or Science degree programs.	Mrs. Dorean E. Estey and the Pridham Family, in memory of Frank and Isa Pridham.
ENGINEERING	Procter & Gamble TME Scholarship	Engineering.	$2,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering and is pursuing a Diploma in Technology Management and Entrepreneurship. Selection is based on academic achievement.	Procter & Gamble
KINESIOLOGY	Tony Proudfoot Memorial Scholarship	Kinesiology.	Not to exceed tuition and compulsory fees.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree in the Faculty of Kinesiology. Selection is based on academic achievement and the demonstration of leadership ability. Preference will be given to a student involved in the UNB Football program. This award is open to students who are enrolled in a minimum of 9 credit hours. A student can receive this award only once.	Friends and family of Tony Proudfoot, BPE 1971.
SCIENCE	Dr. John W. Purdy Scholarship	Physics.	$1,000.	1.	1 year.	Awarded to a student who graduated from a New Brunswick High school, and has declared a major in Physics. Selection will be based on scholastic attainment and financial need.	Family and friends of Dr. John W. Purdy (B.Sc. 1962) and the New Brunswick University Opportunities Fund.

SCIENCE	Robert Quartermain Geology Scholarship	Geology.	$5,500.	2 or more.	3 years.	Awarded to Fredericton campus students who have completed at least the requirements for the first year of their Bachelor program and have declared a major in Geology (Geosciences or Geoengineering). Selection is based on scholastic attainment and financial need. Renewal of the scholarship is contingent on academic performance in Geology subjects (minimum 3.5 GPA) and progress through the program. Transfer students are eligible to be considered.	Robert Quartermain, Chairman & CEO, Pretium Resources Inc.
ENGINEERING	Dr. Varagur S.V. Rajan & Mrs. Savitri Rajan Scholarship	Chemical Engineering.	$1,500.	1.	1 year.	Awarded to Fredericton campus students who have completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Chemical) degree program. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic attainment and financial need.	Dr. & Mrs. Rajan and the New Brunswick University Opportunities Fund.
ENGINEERING	Rory Reardon Memorial Scholarship	Engineering.	$3,000.	2.	1 year (may be renewed).	Awarded to a student who has completed at least the minimum requirements for the second year of the Bachelor of Science in Engineering (any discipline). Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines. Preference will be given to a student who has graduated from a Saint John area high school.	The family and friends of Rory Reardon (BSE ME 2010) and the New Brunswick University Opportunities Fund.
ENGINEERING	Del Reeleder Scholarship	Engineering.	$3,000.	1.	1 year.	Awarded to a New Brunswick student on the Fredericton campus who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering degree program (any discipline). Selection will be based on academic achievement and financial need. Preference will be given to students from Carleton County.	G. Delmar Reeleder (BSE CE 1949).
FORESTRY	Registered Professional Foresters of NB Scholarship	Forestry or Enviromental Management.	$1,000.	3.	1 year.	Awarded primarily on the basis of scholastic attainment to Fredericton campus students entering the second, third or fourth year of either the BScF or BScENR programs. Evidence of leadership, as demonstrated by involvement in extra-curricular activities, executive positions in student societies, etc., will also be a consideration.	The Association of Registered Professional Foresters of New Brunswick.
SCIENCE	Walker H. Rideout Scholarship	Chemistry or Biochemistry.	Variable.	Variable.	1 year.	Awarded on the basis of scholastic attainment and financial need to Fredericton campus students in the Science degree program who are entering the penultimate year in the Honours or Majors program in Chemistry or Biochemistry.	Mr. Walker H. Rideout.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Riegger Bursary	Health Sciences or Nursing.	$3,000.	7.	1 year.	Awarded on the basis of financial need to Saint John campus students who demonstrate successful academic performance. At least one bursary to be awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Health Sciences program and at least two bursaries to be awarded to students who have completed at least the minimum requirements for first year of Bachelor of Nursing program. The recipients must be New Brunswick residents, according to the definition of the Provincial Government's Student Financial Services guidelines. The recipients may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	Riegger family and the New Brunswick University Opportunities Fund.

SCIENCE	Dr. Margot R. Roach Scholarship	Physics.	$10,000.	Up to 3.	1 year (may be renewed).	Awarded to a Fredericton campus student who has completed the minimum requirements for the second year of an undergraduate degree program and is beginning the third year. Preference will be given to a student who has declared a major in Physics. Selection will be based on scholastic attainment. Consideration will be given to renewing the scholarship for the recipient's fourth year of study as long as the student has achieved Dean's List status in the third year and has declared a major in Physics. In any one year, there may be two scholarships awarded: one renewed for the fourth year student and one for the third year student.	Established in 2005 by Dr. Margot R. Roach in celebration of the 50th anniversary of her graduation in Math and Physics in the Class of 1955.
ENGINEERING	Dr. Willis F. Roberts Scholarship	Geodesy and Geomatics Engineering.	$4,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Geodesy and Geomatics) degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic attainment and financial need.	Dr. Willis F. Roberts, B.Sc.For. 1940, D.Sc. 2005 and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Dr. B.W. Robertson Scholarship	Unrestricted.	Variable.	1.	1 year.	A student from York County who has completed at least the normal requirements for the first year of the degree program in which registered at UNB. Preference will be given to students from the Mouth of Keswick postal area. Selections are made on the basis of scholastic attainment. Consideration may be given to financial need.	Family and friends of the late B.W. Robertson.
ENGINEERING	George W. Robinson Memorial Scholarship	Engineering.	Variable.	1.	1 year.	Awarded to a student on the Fredericton campus who has completed at least the minimum requirements of the second year of the Bachelor of Science in Engineering degree program (any discipline) and is entering third year. Selection is based on academic achievement and financial need.	The estate of Mr. George W. (BSE EE 1949) and Mrs. Katharine A. Robinson (BA 1947, MA 1967, MEd 1984).
UNRESTRICTED	Steve Robson Memorial Award	Unrestricted.	Variable.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the normal requirements for the first year of a degree program, is a member of the UNBSJ Seawolves men's volleyball team and has demonstrated a special athletic ability in the sport. The recipient must also have demonstrated successful academic performance, maintaining at least a 2.0 GPA. This award is also open to transfer students.	Friends and family of Steve Robson.
UNRESTRICTED	Joan D. Rogers Scholarship	Unrestricted.	$1,250.	1.	Up to 3 years.	Awarded to a student who has completed at least the requirements for the first year of an undergraduate degree program. The recipient must be a New Brunswick resident, according to the NB Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. A 3.7 scholarship gpa is required to renew this scholarship. Only one scholarship will be awarded every three years.	Joan Rogers (BSc 1951, BEd 1963) and the New Brunswick University Opportunities Fund.
EDUCATION	Joan Rogers Science Educator Scholarship	Education.	$1,250.	2.	1 year.	Awarded to a Fredericton Campus student enrolled in the Bachelor of Education degree program. The student must be a New Brunswick resident, according to the Student Financial Services guidelines. Selection will be based on financial need and academic performance. Preference will be given to a student who has completed a Bachelor of Science.	Joan Rogers, Family, Friends and the New Brunswick University Opportunities Fund.

MULTIPLE	Rosetta Caroline Scholarship	Mathematics.	Up to $750.	1.	1 year.	Awarded to a female student on the Saint John campus who is majoring in Mathematics or who is registered in the Bachelor of Science in Financial Mathematics degree, and has completed at least 60 ch of the degree. Selection will be based on academic achievement and financial need.	Dr. Keith De'Bell, former Dean of the Faculty of Science, Applied Science and Engineering, in memory of his mother.
UNRESTRICTED	David and Maisie Ross Memorial Scholarship	Unrestricted.	$3,000.	1.	1 year.	Awarded to a student who is entering the third or fourth year of an undergraduate degree. Selection will be based on academic achievement and financial need.	Dr. Eric Ross Foundation
UNRESTRICTED	Royal Canadian Regiment Milton Fowler Gregg VC Memorial Bursary	Unrestricted.	Min. $900.	1.	1 year.	Awarded on the basis of financial need to a student enrolled in an undergraduate degree program who has promise in areas of environmental management or international affairs. The recipient must demonstrate successful academic performance and be a Canadian citizen or permanent resident.	The Royal Canadian Regiment.
MULTIPLE	Linda Sales Memorial Bursary	Education or Computer Science.	$500.	1.	1 year.	Awarded on the basis of financial need to a female student on the Fredericton campus who is facing significant personal challenges such as being a single parent. The recipient must demonstrate successful academic performance. Preference will be given to a student enrolled in an undergraduate degree program in the Faculty of Education or the Faculty of Computer Science.	Friends and family of Linda Sales.
MULTIPLE	Della M. Sansom Memorial Scholarship	Education.	$1,000.	1.	1 year.	Awarded to a student in the Bachelor of Education degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Friends and Family of the late Della Sansom and the New Brunswick Opportunities Fund.
UNRESTRICTED	LCol. Erin Savage CD, MD Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the normal requirements for the second year of an undergraduate degree program. The recipient must have demonstrated successful academic performance (2.0 grade point average, as per U SPORTS regulations) special athletic ability in the sport of UNB Reds women's basketball, and community involvement.	Team members of the 1993-94 women's basketball team and friends and family of LCol. Dr. Erin Savage (BSc 1996).
UNRESTRICTED	David Bruce Ritchie Schousboe Memorial Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a student on the Fredericton campus who is a graduate of a Fredericton high school and has completed at least the normal requirements for the first year of the degree program in which registered. Selections are made on the basis of scholastic attainment, financial need and participation in extracurricular activities.	Friends of the late David Bruce Ritchie Schousboe, a former UNB student and the New Brunswick University Opportunities Fund.
RENAISSANCE COLLEGE	Scotiabank Special International Internship	Philosophy in Interdisciplinary Leadership.	$2,000.	5 or more.	1 year.	Awarded to a student who has completed at least the requirements for the first year of the Bachelor of Philosophy in Leadership Studies and is living with a disability or intends to work with people living with disabilities during the student's international internship. The award is to be held during the student's international internship. Selection will be based on academic achievement.	Scotiabank.

SECTION C: SCHOLARSHIPS, PRIZES AND AWARDS

ARTS	Dr. Neil Scott Memorial Scholarship	Elementary Education.	$2,500.	1.	1 year.	Awarded to a male Saint John campus student enrolled in the Bachelor of Education concurrent degree program who has a demonstrated interest in elementary education. Selection will be based on scholastic attainment (preference will be given to a Scholarship GPA of 3.2 or above) with consideration given to the student who demonstrates experience in volunteering or working with children.	Family and friends of the late Dr. Neil Scott.
ENGINEERING	Dwight Scott ASHRAE Scholarship	Mechanical Engineering.	Variable.	1.	1 year.	Awarded to a deserving Fredericton campus student of high academic standing in Mechanical Engineering from New Brunswick or Prince Edward Island who has completed at least 120 ch in the Mechanical Engineering degree program. Preference will be given to a student enrolled in either of Air Conditioning (ME 4453) or Electrical and Mechanical Equipment for Buildings (ME 4263).	The New Brunswick Chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers.
UNRESTRICTED	Richard Scott Merit Award	Unrestricted.	$1,000.	1.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of an undergraduate degree program. Preference will be given to students who have contributed to the campus and local community and held a part-time job while attending school. The recipient must demonstrate successful academic performance (minimum 3.0 scholarship GPA). Consideration may be given to financial need.	UNB Associated Alumni.
UNRESTRICTED	T. Greg Scott Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines and have graduated from Bathurst High School.	T. Greg Scott (BA 1974, BEd 1976, MEd 1981) and the New Brunswick University Opportunities Fund.
UNRESTRICTED	Scoudouc River University Awards	Unrestricted.	Variable.	Multiple.	1 year.	Tenable at a university in New Brunswick. May be held elsewhere if the program is not available in New Brunswick. Awards are open to those who have "signal promise" but are especially needy or handicapped in any way; or, to those with unusual direction or promise; or, to those of distinct interest not qualified for other regularly established scholarships. Nominees must be enrolled in undergraduate or graduate programs. At the time of nomination the nominee must be domiciled in the Province of New Brunswick. Candidates taking up a Scoudouc River University Award may not hold, during the tenure of that award, other major financial awards. Candidates will be approved by the President.	The late Dr. William L. Webster.
MULTIPLE	Lewis Gregory Sears Memorial Scholarship	Mathematics.	Variable.	1 or more.	1 year.	Open to students on the basis of scholastic attainment, who have completed at UNB at least the normal requirements for the first year of an undergraduate degree program, and have demonstrated excellence in a minimum of four term courses in Mathematics.	William L. Sears (BSE.CE 1957) and his mother the late Marjorie Sears, BA Class of 1929, in memory of Lewis Gregory Sears, BA Class of 1929.
EDUCATION	Second Language Research Institute of Canada Scholarship	Education.	$2,000.	1 or more.	1 year.	Awarded to a student who is beginning the Bachelor of Education degree program on the Fredericton campus, and has expressed an interest in and is eligible for the Certificate in Teaching French as a Second Language. Selection is based on academic achievement and French language competency. Consideration may be given to financial need.	Second Language Research Institute of Canada.

216

NURSING, SASE	Shannex Incorporated Scholarship	Nursing.	$3,750.	3.	1 year.	Awarded to students enrolled in the Bachelor of Nursing degree program or the Bachelor of Nursing Advanced Standing degree program at each of the three New Brunswick sites. The recipients must demonstrate excellence in the practice of Gerontological Nursing and in caring for elders. Selection will be based on academic achievement. Preference will be given to students who have demonstrated excellence in NURS 2135 Chronic Care Challenges or NURS 1135 Enhancing Well-Being in Chronicity.	Shannex Incorporated.
MANAGEMENT	Harold Sharp Undergraduate Bursary	Business Administration.	Variable.	Variable.	1 year (may be renewed).	Awarded on the basis of financial need to a student or students continuing beyond the first year (30 credit hours) in the BBA program on the Fredericton campus. The recipient must have at least an average academic record (minimum 2.5 assessment year grade point average).	Faculty, staff and friends of the Faculty of Business Administration.
ARTS	Alvin Shaw Memorial Scholarship in Drama Production	Arts.	$2,000.	1.	Up to 3 years.	Awarded to a Fredericton campus student who is enrolled in a Minor in Drama or a Major in English (Drama) and who is judged to be a top performer in ENGL/DRAM 2173, 2174 or 2175. Preference will be given to students enrolled in an Arts Faculty degree program. Renewal of this scholarship is based on satisfactory performance and progress through the program.	Alvin Shaw.
ARTS	Margaret C. Sheldrick Memorial Scholarship in Arts (Philosophy or Political Science)	Arts.	$525.	1.	1 year.	Open to graduates of a New Brunswick high school, in the Faculty of Arts, who have completed at least the normal requirements for the first year of the Arts degree program at UNB. Preference will be given to students who have demonstrated excellence in at least one six credit hour course in Philosophy or Political Science. Financial need will be a consideration in making the award.	The late Col. (Ret'd) K. Douglas Sheldrick.
ARTS	Margaret C. Sheldrick Memorial Scholarship in Arts (English)	Arts.	$525.	1.	1 year.	Open to graduates of a New Brunswick high school, in the Faculty of Arts, who have completed at least the normal requirements for the first year of the Arts degree program at UNB. Preference will be given to students who have demonstrated excellence in at least one six credit hour course in English. Financial need will be a consideration in making the award.	The late Col. (Ret'd) K. Douglas Sheldrick.
ENGINEERING	Leslie W. Shemilt Scholarship	Chemical Engineering.	Up to $5,000.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Science in Engineering (Chemical) and is a graduate of an Atlantic Canadian high school. Selection is based on academic achievement. Consideration may be given to financial need. Students transferring from another Canadian institution may be considered for this scholarship.	Dr. Desmond J. Green (MSE CHE '67, DSC '95), engineer, entrepreneur and community leader.
FORESTRY	David N. Shepherd Bursary	Forestry and Environmental Management.	$1,500.	1.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program in the Faculty of Forestry and Environmental Management and has demonstrated successful academic achievement. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Lorelei Robins, Gregory Robins, Friends and Family of the late David N. Shepherd, and the New Brunswick University Opportunities Fund.
FORESTRY	Ross and Bess Silversides Memorial Scholarship in Forestry	Forestry and Environmental Management.	Variable.	Multiple.	1 year.	Awarded to a Canadian citizen or permanent resident who is a Fredericton Campus student in the faculty of Forestry and Environmental Management. Selection is made on the basis of academic achievement with consideration given to financial need.	The family and friends of the late Ross and Bess Silversides.

UNRESTRICTED	Dr. Ram and Nirmal Singhal Scholarship	Unrestricted.	Approx. $450.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for Year 1 and is beginning Year 2 of an undergraduate degree program, or has completed the requirements for Year 2 and is beginning Year 3 of an undergraduate degree program. Selection will be based on scholastic attainment and financial need.	Dr. Ram Singhal, MSc '69, PhD '73, and Nirmal Singal, BBA '79.
SCIENCE, APPLIED SCIENCE & ENGINEERING	SJ General Hospital School of Nursing Alumni Scholarship	Nursing.	$1,500.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the requirements for the second year of the Bachelor of Nursing degree program. Selection will be based on demonstrated excellence in the area of geriatrics. The recipient must demonstrate successful academic performance.	Alumni of the Saint John General Hospital School of Nursing.
EDUCATION	F. Dorothy Skene Memorial Scholarship	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who is enrolled in the Bachelor of Education degree program and has shown potential for a high degree of professional ability as a teacher. Selection will be based on academic achievement.	The Victor Hatheway Chapter of the I.O.D.E.
NURSING	Judith Diane (McKay) Slipp Memorial Scholarship	Nursing.	$300.	1.	1 year.	Awarded to a Fredericton campus student entering the final year of the Basic Nursing Program, with preference given to a graduate of a Fredericton area high school. Selection is made on the basis of scholastic attainment.	Family and friends of the late Judith Diane (McKay) Slipp, (BN '67).
ENGINEERING	A.R. Mearle Smith Bursary	Engineering.	Variable.	Variable.	1 year.	Open to graduates of Bathurst High School requiring financial assistance who are currently enrolled in Engineering at UNB, and who have completed at least the normal requirements for the first year of the Engineering program at UNB. Preference will be given to Mechanical Engineering students.	The late A.R. Mearle Smith.
SCIENCE	Dr. G.F.M. Smith Memorial Scholarship	Biological Sciences.	Approx. $2,000.	1.	1 year.	Awarded to a UNBF student in the Faculty of Science who has completed a minimum of 75 ch, who is majoring or honouring in Biology (including interdisciplinary programs) and who has good academic standing, high personal integrity and an apparent aptitude for research.	The family of the late G.F.M. Smith.
ARTS	W.Y. Smith Memorial Scholarship	Arts.	$1,250.	1.	1 year.	Awarded to a Fredericton campus student in the Bachelor of Arts degree program. Selection will be made on the basis of scholastic attainment and financial need. Preference will be given to a student who has declared a major in economics.	Former students, colleagues and family established this scholarship is in memory of W.Y. Smith, professor of Economics and Political Science at UNB, former Vice-President (Academic) and professor emeritus.
ARTS	C. Ruth (Cumming) Spicer Scholarship	History.	$4,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Arts degree program and is majoring in History. Selection will be based on academic achievement. Preference will be given to a mature female student studying Maritime history.	Linda B. (Spicer) MacDonald (BPE 1970).
SCIENCE, APPLIED SCIENCE & ENGINEERING	Sr. Darrah / St. Joseph's Hospital Alumni Scholarship	Nursing.	Approx. $550.	1.	1 year.	Awarded to a Saint John campus student who is enrolled in the Bachelor of Nursing degree program. Selection is based on financial need and the recipient must demonstrate successful academic performance.	The New Brunswick Nurses Foundation.
NURSING	Laura Stairs Memorial Rugby Scholarship	Nursing.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. The recipient must demonstrate academic achievement (2.0 scholarship GPA) and special athletic ability in the sport of women's rugby. Preference will be given to a student who is enrolled in the Bachelor of Nursing degree program.	Friends of Laura Stairs (BSKIN 2006, BN 2010).

UNRESTRICTED	Robert (Bob) Stangroom Memorial Award	Unrestricted.	Min. $500.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of an undergraduate degree program on the Fredericton campus. The recipient must demonstrate a commitment to developing a better community through volunteering and successful academic performance. This award is also open to transfer students.	Family and friends of Prof. Robert (Bob) Stangroom, retired professor of Physical Education.
MULTIPLE	Stantec Scholarship	Engineering or Environment and Natural Resources.	$2,500.	4.	1 year.	Awarded to students who have completed at least the requirements for the first year of the Bachelor of Science in Engineering (any discipline) or the Bachelor of Science in Environment and Natural Resources degree program. Selection is based on scholastic attainment and participation in extracurricular activities. Consideration may be given to financial need. Preference will be given to female students.	Originally established by Jacques Whitford which was acquired by Stantec in 2009.
EDUCATION	Audrey Stevenson Memorial Scholarship	Education.	$3,125.	3.	1 year.	Awarded to a student who is enrolled in the Bachelor of Education degree program. Selection will be based on scholastic attainment and financial need, with consideration given to demonstrated leadership qualities and community involvement. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines.	Donald R. Stevenson, in loving memory of his mother, and the New Brunswick University Opportunities Fund.
MANAGEMENT	David W. Stevenson, F.C.A. Scholarship	Business Administration.	$2,500.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Business Administration degree program on the Fredericton campus and has declared a major in accounting. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need.	David W. Stevenson, F.C.A. (BBA '68) and the New Brunswick University Opportunities Fund.
KINESIOLOGY	Dr. Chris and Diane Stevenson Scholarship	Kinesiology.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of a degree program in the Faculty of Kinesiology. Selection is based on academic achievement and community involvement.	Friends and alumni of the Faculty of Kinesiology in honor of Dr. Christopher Stevenson, a member of the Faculty of Kinesiology (1974-2007) and Dean of the Faculty (1999-2006).
EDUCATION	Murray F. Stewart Scholarship	Education.	Variable.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Education degree program who has completed three years of study in an Arts degree with a major in English including courses in English composition and/or linguistics. Preference will be given to a student who plans to pursue a concentration in literacy/language arts in Education. Selections made on the basis of scholastic attainment with consideration of financial need.	Murray F. Stewart, former English education professor at UNB.
UNRESTRICTED	Student Union Bursary	Unrestricted.	Variable.	1 or more.	1 year.	Awarded on the basis of financial need, to a member of the Student Union (i.e. paid the student activity fee), who has completed the normal requirements for the first year of the program in which the student is registered.	The UNB Student Union.
NURSING	Dr. Jed B. Sutherland Memorial Bursary	Nursing.	Min. $500.	1.	1 year.	Awarded to a full or part-time student entering the 4th year of the baccalaureate Nursing degree program at UNB who, as recommended by faculty, has demonstrated caring and commitment in the care of older adults.	Alzheimer Society of New Brunswick and family of the late Dr. Jed B. Sutherland, BA '39.

ENGINEERING	Sutton-Wilkinson Memorial Bursary	Engineering.	Approx. $500.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus Engineering student, with preference given to a student in Civil Engineering. The recipient must have demonstrated successful academic performance.	Friends of the late Wade Sutton and the late Kevin Wilkinson.
EDUCATION	Florence Swan Memorial Scholarship	Education.	Variable.	1 or more.	1 year.	Awarded to a student enrolled in an undergraduate degree program in the Faculty of Education. Selection is based on academic achievement and financial need.	The estate of Florence Swan.
UNRESTRICTED	H. Earle Swim Memorial Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of a degree program. Selection will be based on academic achievement.	The Estate of H. Earle Swim.
MULTIPLE	Teck Resources Scholarship	Computer Science, Earth Science & Engineering.	$1,900.	4.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year in one of the following degree programs: Bachelor of Science in Engineering (Chemical, Geological or Mechanical), Bachelor of Computer Science, Bachelor of Science in Computer Science or Bachelor of Science majoring in Earth Sciences. Selection will be based on academic achievement. Preference will be given to female students.	Teck Resources Limited.
ARTS	The Saint Andrews Society of Saint John Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. Selection will be based on academic achievement and volunteer activities. Preference will be given to a student enrolled in a Bachelor of Arts degree program majoring or honouring in history.	The Saint Andrews Society of Saint John.
ENGINEERING	Joseph Edward Thomas Memorial Scholarship	Engineering.	$4,000.	2.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering degree program. Selection is based on academic achievement.	Mark Joseph Thomas (BScChE 1982) and Rena Alberta Thomas.
SCIENCE, APPLIED SCIENCE & ENGINEERING	Anne D. Thorne Saint John School of Nursing Scholarship	Nursing.	Variable.	Variable.	1 year.	Awarded to a graduate of the Saint John School of Nursing who is enrolled in Nursing on the Saint John campus on a full-time or part-time basis. Financial need will be a consideration in the selection process. In the event that the pool of former graduates of the Saint John School of Nursing furthering their education is deemed to be depleted, the scholarship will be awarded to a high school graduate from the Saint John area who is enrolled in Nursing at the University of New Brunswick on the Saint John campus. Financial need will remain a consideration in the awarding of the scholarship.	Saint John School of Nursing.
ENGINEERING	Paul C.C. Ting Memorial Scholarship	Electrical Engineering.	Approx. $3,000.	1.	1 year.	Awarded to a student who has completed the normal requirements for the first two years of the Bachelor of Science in Engineering (Electrical) degree program and who has demonstrated outstanding performance in the study of electric circuits.	Family and friends of former UNB Faculty of Engineering Professor Paul Ting.
MULTIPLE	K.T. (Kwok-Tai) Kan & Marie Tong Scholarship	Civil Engineering or Chemistry.	$5,000.	6.	1 year (may be renewed).	Awarded to three Fredericton campus students who are entering the second year of the Bachelor of Science in Engineering (Civil) and three Fredericton campus students who are entering the second year of the Bachelor of Science with a Major in chemistry. Selection will be based on academic achievement (minimum GPA of 3.0) and financial need.	Drs. K.T. and Marie Tong Kan, and friends.
UNRESTRICTED	Wilfred Tong and Rosalind Lee Memorial Scholarship	Unrestricted.	$4,000.	2.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for the first year of an undergraduate degree program and is beginning second year. Selection is made on the basis of academic achievement and financial need.	Dr. Marie Tong, in loving memory of her parents.

ARTS	Dr. Frank Toole and Norah Vernon Barry Toole Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded to a Fredericton campus student who demonstrates excellence in one or more music courses. Selection is based on academic achievement.	The Estate of Miss Nan V. Gregg.
ARTS	Heather (Clarke) Toole Scholarship	Education.	Min. $2,000.	1.	1 year.	Awarded to a Saint John campus student who is entering the 3rd or 4th year of the concurrent Bachelor of Arts/Bachelor of Education degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services guidelines. Selection is based on academic achievement and financial need.	Heather Toole (BA 1968, BED 1976, MED 1981) and the New Brunswick University Opportunities Fund.
MANAGEMENT	Trenholm Scholarship	Business.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the first year of the Bachelor of Business Administration degree program. Selection is based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Barbara and Brian Trenholm, and the New Brunswick University Opportunities Fund.
MULTIPLE	Andrew Turnbull Scholarship	Chemistry or Chemical Engineering.	Variable.	1 or more.	1 year.	Awarded to Fredericton campus students who have completed at least the minimum requirements for the first year of an undergraduate degree program and are residents of Queen's County, New Brunswick with preference given to graduates of the Cambridge Narrows School. Students who are enrolled in the Bachelor of Science with a Major in Chemistry or the Bachelor of Science in Engineering (Chemical) degree programs will be considered first. Selection will be based on scholastic attainment and financial need.	Andrew Turnbull and the New Brunswick University Opportunities Fund.
ENGINEERING	D. O. Turnbull Memorial Scholarship	Engineering.	Min. $3,000.	1.	1 year.	May be awarded annually to a New Brunswick student who has completed his or her penultimate year of Engineering with high academic standing.	Association of Professional Engineers of the Province of NB.
UNRESTRICTED	UNB Alumni Legacy Award	Unrestricted.	Tuition & fees.	1.	2 years.	Awarded to a student who has completed at least the minimum requirements for the second year of the student's first undergraduate degree program and has not completed the requirements for the third year. Selection is based on academic achievement (minimum 3.0 scholarship GPA) and demonstrated involvement in the university. Candidates are required to submit an essay (minimum 500 words) on "Why I am Proudly UNB" and a letter of recommendation from a UNB alumna/us. One scholarship will be active in any given year.	UNB Associated Alumni.
UNRESTRICTED	UNB Associated Alumni Leadership Award	Unrestricted.	Approx. half tuition for the year.	Variable.	1 year.	Awarded to a student who has completed the normal requirements for at least the first year of an undergraduate degree program, with preference being given to a student entering their final year. Selection will be made on the basis of evidence of leadership experiences as demonstrated by involvement in extracurricular activities benefiting student life and the surrounding community which indicate the potential to advance the interests of the Associated Alumni after graduation, and successful academic achievement (minimum 3.0 scholarship GPA). Supplementary information may be requested from shortlisted candidates. The recipient may retain this scholarship while enrolled in a UNB articulated degree program and attending the partnering institution.	UNB Associated Alumni.
MULTIPLE	UNB Environmental Studies Scholarship	Environmental Studies.	Variable.	1 or more.	1 year.	Awarded to students from the Atlantic Provinces who have completed at least the minimum requirements for the first year of an undergraduate degree program and have a demonstrated interest in the environment. Selection is based on academic achievement.	

UNRESTRICTED	UNB Faculty of Arts CAMS Travel Study Program Award	Unrestricted.	Up to $1,500.	Variable.	1 year.	Awarded to students who are enrolled in an undergraduate degree program and participating in a Travel Study Program associated with the Department of Culture and Media Studies. Selection will be based on academic achievement. Consideration may be given to financial need. Recipients must take the Travel Study course for credit and use the award for the CAMS Travel Study Program taking place in the next Summer Session; the award will not be deferred. Preference will be given to students pursuing a Major or Honors in the Department of Culture and Media Studies.	International Fiction Review & Friends of the Department of Culture & Media Studies.
SCIENCE	UNB Foundations of Medicine Scholarship	Science.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed the requirements for the third year of the Bachelor of Science degree program and has indicated the intention to pursue studies toward obtaining a degree in medicine. Selection is based on scholastic attainment and financial need.	UNB Alumni in the Dalhousie University Medical School Graduating Class of 1981.
UNRESTRICTED	UNB Saint John 50th Anniversary Scholarship	Unrestricted.	Min. $1,500.	Variable.	1 year.	Awarded to a Saint John campus student who has completed at least the minimum requirements for the first year of an undergraduate degree program. Selection is based on academic achievement and financial need, with consideration given to the student's involvement in extracurricular activities.	Alumni and Friends of UNBSJ.
FORESTRY	UNB Scholarship in Environment & Natural Resources	Environment & Natural Resources.	Variable.	1 or more.	1 year.	Awarded to students who have completed at least the minimum requirements for the first year of the Bachelor of Science in Environment & Natural Resources. Selection is based on academic achievement. Preference will be given to students majoring in Wildlife Conservation who have demonstrated interest in land bird ecology.	
UNRESTRICTED	UNB Third Century Fund Merit Award	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students demonstrating a special talent and showing successful academic performance.	Contributors to the Third Century Fund.
UNRESTRICTED	UNB Third Century Fund Saint John Scholarship	Unrestricted.	Variable.	1.	1 year.	Awarded on the basis of scholastic attainment and financial need to a student on the Saint John campus.	Contributors to the Third Century Fund.
UNRESTRICTED	UNB Third Century Fund Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded to students on the basis of scholastic attainment and financial need.	Contributors to the Third Century Fund.
UNRESTRICTED	UNBF Student Union Academic Achievement Scholarship	Unrestricted.	$1,000.	2.	1 year.	Awarded to Fredericton campus students who are Student Union members (i.e. paid the Student Activity fee). One scholarship is to be awarded to a student who is entering the third year of an undergraduate degree program and the other scholarship is to be awarded to a student who is entering the fourth year of an undergraduate degree program. Selection is based on academic achievement in his/her university career.	UNB Fredericton Student Union.
UNRESTRICTED	UNBF Student Union Bursary	Unrestricted.	Variable.	2.	1 year.	Awarded to Fredericton campus students who have completed at least the minimum requirements for the first year of the undergraduate degree program in which they are registered. Selection is based on scholastic attainment and financial need.	The UNB Fredericton Student Union.
UNRESTRICTED	UNBF Student Union Human Development Scholarship	Unrestricted.	$1,000.	2.	1 year.	Awarded to Fredericton campus students who are Student Union members (i.e. paid the Student Activity fee) and have completed the requirements for the second or the third year of an undergraduate degree program. Selection is based on academic achievement and a demonstration of exceptional dedication to the betterment of his/her community.	UNB Fredericton Student Union.

UNRESTRICTED	UNBF Student Union Leadership Scholarship	Unrestricted.	Variable.	2.	1 year.	Open to a Fredericton campus student who has completed at least the normal requirements for the first year of the undergraduate degree program in which the student is registered. The recipient must be a student in a leadership position in organizations in the community or on campus. The selection is made on the basis of scholastic attainment.	The UNB Fredericton Student Union.
UNRESTRICTED	UNBSJ International Student Bursary	Unrestricted.	$500.	1 or more.	1 year.	Awarded on the basis of financial need to an international student on the Saint John campus who has completed at least the requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. Preference will be given to a student who is from Bosnia.	
UNRESTRICTED	University Faculty & Staff Undergraduate Scholarship	Unrestricted.	Variable.	Multiple.	1 year.	Open to students who have completed at least the normal requirements for the first year of the program in which they are registered at the University. Selections are made on the basis of scholastic attainment and financial need.	Contributors to the University Faculty/Staff Fund.
UNRESTRICTED	Anthony Enman Unsung Hero Merit Award	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Saint John campus student who is enrolled in their final year in an undergraduate degree program who has made outstanding contributions to the university and surrounding community. The recipient must exude strong leadership qualities and selflessness, placing community causes ahead of oneself and demonstrate successful academic performance.	Student Representative Council.
ARTS	Leonard J. and Helen M. Upton Memorial Bursary	Unrestricted.	$2,000.	1.	1 year.	Awarded to a Saint John campus student who has completed the requirements for the first year of an undergraduate degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. Preference will be given to a mature female student enrolled in the concurrent Bachelor of Arts/Bachelor of Education degree program.	Marilyn Upton (MEd 1987) and New Brunswick University Opportunities Fund.
MULTIPLE	Noreen (Donahoe) Valenta Scholarship in Engineering	Engineering.	$1,000.	1.	1 year.	Awarded to a female student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering degree program. Preference given to a student enrolled in Civil Engineering. Selection will be based on scholastic achievement and extracurricular involvement.	Katherine (Valenta) Darvesh (BSc 1980, PhD 1984) and Sultan Darvesh (BSc 1979, MSc 1979, PhD 1983).
UNRESTRICTED	Charlotte Van Dine CFUW-Fredericton Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a female Fredericton campus student with a minimum Scholarship GPA of 3.7 who has completed at least the normal requirements for the first year of an undergraduate degree program at UNB. The recipient must be a New Brunswick resident, as defined by the Provincial Government Student Financial Services. Financial need is an important consideration.	Canadian Federation of University Women-Fredericton branch, in honour of Charlotte Van Dine BA 1946, and the New Brunswick University Opportunities Fund.
SCIENCE	Valeria Vanicek Memorial Scholarship	Chemistry.	Approx. $300.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science degree program and has declared a major in chemistry. The recipient must be a New Brunswick resident according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on scholastic achievement and financial need.	The Fredericton Quilter's Guild and friends and family of the late Valeria Vanicek. A donation was received from the New Brunswick University Opportunities Fund.

ENGINEERING	Ken Vaughan Memorial Bursary	Civil Engineering.	Variable.	Variable.	1 year.	Open to Civil Engineering students who have completed at least the normal requirements for the first year of the Civil Engineering degree program (minimum 40 ch). Selections are made on the basis of scholastic attainment and financial need.	The Moncton Motor Sport Club.
ARTS	Dr. Bernie Vigod Memorial Scholarship	History.	$2,000.	1.	2 years.	Awarded on the recommendation of the Department of History to an outstanding Fredericton campus student entering the Honours program in History.	Family and friends of the late Bernie Vigod.
UNRESTRICTED	George and Linda Vlasak Scholarship	Unrestricted.	$3,000.	1.	1 year.	Awarded to a student who is entering the third or fourth year of an undergraduate degree. Selection will be based on academic achievement and financial need.	Dr. Eric Ross Foundation.
ENGINEERING	Jawahar and Ahilya Vohra Scholarship	Engineering.	Variable.	2.	1 year.	Awarded to Fredericton campus students (one to a male student and one to a female student) who have completed more than 38 credit hours and less than 111 credit hours in the Bachelor of Science in Engineering (Electrical or Computer) degree program. The scholarship will be awarded to students who have a scholarship grade point average of 3.7 or higher (Dean's List) and have been involved with and contributed the most to activities of their local community. Preference will be given to students who have shown a willingness to serve the needs of others while pursuing their course of academic study.	Friends and family of Jawahar and Ahilya Vohra.
RENAISSANCE COLLEGE	Jennifer Prosser Wade Scholarship	Philosophy in Interdisciplinary Leadership.	$1,500.	2.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Philosophy in Interdisciplinary Leadership degree program offered by UNB's Renaissance College and who is a graduate of a New Brunswick high school. Selection will be based on academic achievement and financial need.	Dr. Jennifer A. Wade and the New Brunswick University Opportunities Fund.
ENGINEERING	Lorenzo N. Wadlin Scholarship	Mechanical Engineering & Unrestricted.	Approx. $525.	2.	1 year.	One scholarship to a student entering the fifth term of Mechanical Engineering, who is a native of Charlotte County, and who makes a grade of at least B in the final examination in Mathematics for the year in which the scholarship is given. In the event that in any one year there should not be in Mechanical Engineering a student from Charlotte County, then the scholarship shall be given to such student from any other county in the Province of New Brunswick who obtains a standing of B in Mathematics in the final examination for that year. The second scholarship is to be awarded to a student entering the third term in any faculty, who obtains high academic standing of B+ or more.	The late Lorenzo N. Wadlin.
UNRESTRICTED	Wendell Wagner Memorial Bursary	Unrestricted.	$250.	1.	1 year.	Awarded on the basis of financial need to a student from Nova Scotia who has completed at least the requirements for the first year of an undergraduate degree program and has demonstrated successful academic performance. Preference will be given to a graduate of Middleton Regional High School, Nova Scotia.	Friends and family of Wendell Wagner, BPE 1999.
EDUCATION	Evelyn Walker Memorial Bursary	Education.	Variable.	1.	1 year.	Awarded on the basis of financial need to a female Anglophone student who is enrolled in the Bachelor of Education degree program on the Fredericton campus and is intending to teach French as a second language and has demonstrated successful academic performance. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family & friends of Evelyn Walker and the New Brunswick Universities Opportunities Fund.

UNRESTRICTED	Lynn Walsh Volleyball Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who is a current member of the UNB Reds women's volleyball team. Selection is based on academic achievement (2.0 grade point average, as per U SPORTS regulations). Preference will be given to a student has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering degree program (any discipline).	Lynn Walsh BScE 2002.
EDUCATION	R. Earl and Mary L. Walter Memorial Scholarship	Education.	Variable.	1 or more.	1 year.	Open to students in the concurrent or consecutive Bachelor of Education degree program. Selections are made on the basis of scholastic attainment.	The Estate of Dr. Mary L. Walter, BT 1964, BA 1967.
SCIENCE	Ward Family Scholarship	Science.	$11,000.	1.	1 year.	Awarded to a Fredericton campus student who is a graduate of a Maritime high school (NB, NS, PEI) enrolled in the third or fourth year of the Bachelor of Science program intending to attend medical school. Selection is based on academic achievement.	David Ward.
MULTIPLE	Mackenzie (Mac) Watson Bursary in Geology	Earth Sciences or Geological Engineering.	$4,000.	2.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science degree program and has declared a major in Earth Sciences or Geological Engineering. Preference will be given to a student who has an interest in economic geology. The recipient must be a New Brunswick resident, according to the definition of the Provincial government's Student Financial Services Guidelines.	Dr. Mackenzie (Mac) Watson, BSc 1959, DSc 2014 and the New Brunswick University Opportunities Fund.
ENGINEERING	John S. Watt Memorial Scholarship	Civil Engineering.	$500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering (Civil). Selection is based on academic achievement and financial need.	The estate of John S. Watt.
ARTS	Evelyn (Evie) Marie Webber Memorial Scholarship	Arts or Education.	$1,000.	1.	1 year (may be renewed).	Awarded to a Saint John campus student who is enrolled in the concurrent Bachelor of Arts/Bachelor of Education program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government´s Student Financial Services guidelines. Selection is based on academic achievement and financial need. Preference will be given to a mature student.	Friends and family of the Late Evelyn Webber and New Brunswick University Opportunities Fund.
MULTIPLE	Dr. Theodore Weiner Memorial Scholarship	Science or Engineering.	Variable.	2.	1 year.	Awarded annually to students on the Fredericton campus, one in Science, giving preference to Physics, and one in Engineering. The recipients must have completed at least the normal requirements for the first year of their program at UNB. Selection is made on the basis of scholastic attainment and financial need.	Family, colleagues and friends of the late Dr. Theodore Weiner, Professor Emeritus of Physics, who taught at UNB from 1947-1975.
ARTS	Roberta Wilson Weiner Scholarship	Arts.	Approx. $1,000.	1.	1 year.	Awarded annually to a student on the Fredericton campus who has successfully completed at least the first year of an Arts degree program on the Fredericton campus. Selection is to be made on the basis of academic achievement and financial need. Through this scholarship, the donor hopes to encourage students to enter such fields as library, archives, gallery or museum work. This scholarship is tenable at UNBF.	Mrs. R.W. Weiner.
UNRESTRICTED	Richard Laurence Weldon Scholarship	Unrestricted.	Variable.	Variable.	1 year.	Awarded primarily on the basis of scholastic attainment.	The late Sylvia Thoresen Weldon.
UNRESTRICTED	Kate Westman Scholarship	Unrestricted.	$2,000.	1.	1 year.	Awarded to a female student who has completed at least the normal requirements for the first year of an undergraduate degree and is serving on the University Senate or involved with the Brunswickan student newspaper. Selection is made on the basis of academic achievement.	The estate of Kate Westman.

NURSING	M. Patricia Whalen Memorial Bursary	Nursing.	$750.	1.	1 year.	Awarded on the basis of financial need to a Fredericton campus student who has completed the third year of the Bachelor of Nursing degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services Guidelines and demonstrate successful academic achievement. Preference will be given to a student who is a single parent.	Marcia (Whalen) Trail (BN 1973, MN 1999), retired Senior Teaching Associate, UNB's Faculty of Nursing (Moncton) and the New Brunswick University Opportunities Fund.
MULTIPLE	Philip J. Whalen Memorial Scholarship	Chemical Engineering.	$3,000.	1.	1 year.	Awarded to a student who is enrolled in the Bachelor of Science in Engineering (Chemical) degree program. The recipient must be a New Brunswick resident, according to the definition of the Provinical Government's Student Financial Services. Selection is based on academic achievement and financial need.	LuminUltra Technologies Ltd and the New Brunswick University Opportunities Fund.
MULTIPLE	Wheatley Memorial Bursary	Engineering or Science.	Min. $1,000.	2 or more.	1 year.	Awarded on the basis of financial need to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Engineering or Bachelor of Science degree program and has demonstrated successful performance. Preference may be given to married students.	Family of Eric Wheatley, founder and head of Mechanical Engineering Dept. & his wife Wenonah Wheatley, a member of the Faculty Women's Club and a long-time supporter of student wives.
ENGINEERING	George Stephenson Wheatley Engineering Scholarship	Engineering.	Min. $1,000.	2.	1 year.	Awarded to a Fredericton campus Bachelor of Science in Engineering student who has completed at least the minimum requirements of the first year. The recipient must be from Atlantic Canada or Quebec. Selection will be based on academic achievement and financial need.	G. Stephenson Wheatley (BSE CE 1967).
UNRESTRICTED	Frank McLeod Whelpley Scholarship	Unrestricted.	Approx. $150.	1.	1 year.	Deserving young man who needs financial assistance to complete his university course.	Mrs. C.W. Whelpley.
UNRESTRICTED	Judy Whipple Family Bursary	Unrestricted.	$1,750.	1.	1 year.	Awarded to a Saint John campus student who has completed at least the requirements for the second year of an undergraduate degree program. Selection is based on academic achievement and financial need. Preference will be given graduates of Harbourview High School. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines.	Family and friends of Judy Whipple and the New Brunswick University Opportunities Fund.
EDUCATION	Ralph Whiteley Memorial Science Educator Scholarship	Education.	$750.	1.	1 year.	Awarded to a Fredericton campus student enrolled in the Bachelor of Education degree program. The recipient must be a New Brunswick resident, according to the definition of the Provincial Government's Student Financial Services guidelines. Selection is based on academic achievement and financial need. Preference will be given to students interested in teaching elementary science.	Joan Rogers (BSc 1951, BEd 1963) and the New Brunswick University Opportunities Fund.
SCIENCE	Rosemary A. Wilcox Memorial Scholarship in Earth Sciences	Earth Sciences.	Variable.	1.	2 years.	Awarded to a Fredericton campus student who has completed at least the minimum requirements for the second year of the Bachelor of Science and has declared a major in Earth Sciences. Selection is made on academic achievement. Only one scholarship will be awarded every two years.	Donald Wilcox, BSc 1947.

ARTS	A. Jeyaratnam Wilson Memorial Scholarship	Political Science.	$2,000.	1.	1 year.	Awarded to a Fredericton campus student who has declared a major or honours in political science. Preference will be given to a student who has demonstrated excellence in International Relations or Comparative Politics. Selection is based on scholastic attainment.	Friends and family of A. Jeyaratnam Wilson.
UNRESTRICTED	Dwain and Sharon Wilson Athletic Scholarship	Unrestricted.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the normal requirements for the first year of an undergraduate degree program at UNB. The recipient must be a member of the UNB Reds men's hockey team and have achieved at least a 3.0 grade point average in the previous year. Preference will be given to a student enrolled in the Bachelor of Science in Engineering or the Bachelor of Science degree program.	Sharon (BOM 1988) and Dwain (MSc Eng CHE 1990) Wilson.
ENGINEERING	Frank Wilson Scholarship	Civil Engineering.	$4,500.	1.	1 year.	Awarded to a student who is entering the third or fourth year of the Bachelor of Science in Engineering (Civil) degree program. Selection is made on the basis of a demonstrated practical interest in civil engineering with consideration given to financial need, extracurricular activities, practical potential, and ethical standards.	Family, friends, colleagues and former students of Dr. Frank R. Wilson B.Sc. CE 1962, M.Sc. CE 1963, former professor of civil engineering, dean of engineering, dean of graduate students, dean of students and vice president research at the University of New Brunswick.
UNRESTRICTED	Ken Windsor Memorial Scholarship	Unrestricted.	$2,500.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least one year of study in an undergraduate degree program and lives in residence on campus. Preference will be given to a student living in Harrison House. Selection is based on academic achievement.	Peter Galoska (BSc 1978).
KINESIOLOGY	Barry "Toad" Wishart Community Spirit Merit Award	Kinesiology or Recreation Studies.	$1,000.	1.	1 year.	Awarded to a student who has completed at least the minimum requirements for the first year of the Bachelor of Science in Kinesiology or the Bachelor of Recreation and Sports Studies. The recipient must demonstrate leadership, commitment to developing a better community through volunteering with emphasis on recreation and sport and successful academic performance. This award is also open to transfer students.	Family and friends of Barry "Toad" Wishart (BPE 1973).
NURSING	Scott Withrow Memorial Scholarship	Nursing.	$1,500.	1.	1 year.	Awarded to a male student on the Fredericton campus student who has completed at least the minimum requirements of the first year of the Bachelor of Nursing degree program. Selection is based on academic achievement and financial need.	Friends and family of the late Scott Withrow who was tragically killed in a car accident in 2006 during his first year of Nursing.
ENGINEERING	Brian and Dalia Wood Scholarship	Engineering.	$1,000.	1.	1 year.	Awarded to a Fredericton campus student who has completed at least the requirements for the first year of the Bachelor of Science in Engineering degree program. Selection will be based on academic achievement and financial need. The recipient must be a New Brunswick resident, according to the Provincial Government's Student Financial Services guidelines.	Brian (BSE CE 1989) and Dalia Wood.

MANAGEMENT	H.D. Woods Memorial Bursary	Business Administration.	Approx. $1,000.	1.	1 year.	Awarded on the basis of financial need to a student continuing beyond the first year (30 ch) in the BBA program on the Fredericton campus. The recipient must have at least an average academic record. This Bursary was established to recognize the outstanding contributions made by the late Professor H.D. Woods to industrial relations, and to the students and Faculty of Management at UNB.	Friends and family of the late H.D. "Bus" Woods.
ENGINEERING	Johann Wordel Scholarship	Civil Engineering.	Variable.	Variable.	1 year (may be renewed).	Awarded to Fredericton campus students who have completed at least 30 credit hours or one year of study in the Civil Engineering degree program and have achieved at least a B+ average (3.3 gpa). This scholarship is open to second and third year students in Civil Engineering and may be renewed through annual application procedures if the student maintains at least a B+ or 75% average (3.3 gpa). Recipients must have been born in New Brunswick or have resided in New Brunswick 10 months prior to attending UNB.	The late Johann Wordel.
UNRESTRICTED	Dr. Wu and Mrs. Wu Ho Man-yuen Memorial Undergraduate Bursary	Unrestricted.	Variable.	Multiple.	1 year.	Awarded on the basis of financial need to students who have completed at least the requirements for the first year of an undergraduate degree program and have demonstrated successful academic performance.	Michael (BScME 1964, LLD 1989) and Teresa Wu in memory of his father and mother.
SCIENCE	Dr. Haider R. Zaidi Memorial Scholarship	Physics or Mathematics.	Approx. $500.	1.	1 year.	Awarded to a Fredericton campus student majoring in Physics or Mathematics who has successfully completed the minimum credit hour requirements for two years of study and a has achieved a minimum GPA of 3.7. Selection will be based on scholastic attainment and financial need. Preference will be given to Physics students.	Family of the late Dr. Haider R. Zaidi.

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

FREDERICTON CAMPUS

The descriptions below are brief summaries of the service provided for students. Individuals interested in any of these services are encouraged to contact the relevant department for further information.

Accommodation

This section provides information about University residences, and off campus housing as available in Fredericton and Saint John.

RESIDENCES

The University maintains thirteen residence halls, including traditional style, suite-style (one, two and three bedroom furnished suites) and apartment style houses (one, two and three bedroom unfurnished apartments). UNB believes in a developmental residential living experience, supporting both academic success and personal development. Living to Learn fosters an academic context within the Residence Community and assist students in their transition to more independent living and the development of transferable skills. As a peer-supported learning environment, Leading to Learn also seeks to develop student leadership skills through wellness programming. High speed internet is available in all UNB-F residences. UNB further fosters a positive living environment through attractive common areas, recent infrastructure improvements, and policies such as all residences being non-smoking. Residence dining is available in residence dining halls offering ultimate dining (greater freshness, variety, and personalization of food). UNB also offers several retail food outlets on campus to provide students with a wide variety of dining options. The residences, houses, and dining halls are administered by Residence, a division within Student Services. Each residence house is supported by a House Team consisting of Student Leaders, both elected by the House (House President and Committee) and selected by the university (Residence Assistants). These House Teams work closely with residence professional support resources including the Residence Life Coordinators, the Residence Office Team, and the Director of Residence Life. The Senior Director, Residence, is a full-time professional responsible for leadership, overall budget and management, governance, quality, development, food quality, physical operation (maintenance, repairs, and cleaning) and long-term vision of Residence.

RESIDENCE ADMISSIONS

General

Since residence space at UNB is limited, no one can be guaranteed admission or readmission to residence until the payment of the non-refundable residence application fee is completed by the student and a formal offer of residence is issued by the Residence office.

1. The University recognizes the desirability and value of Students living in residence in their first undergraduate year as well as having senior students remain in residence. Hence, every effort is made to ensure a reasonable balance between new admission and returning students.
2. Although consideration is given to the student's preferences, admission/readmission to residence guarantees a student a place in residence as opposed to a particular room. Initial room assignments or later changes are at the sole discretion of the University.
3. Room assignment information is available in July.

New Residents

1. Students requesting residence must complete and submit a UNB Residences Application Form. Please note that this is a separate document from the University of New Brunswick Application for Admission.
2. New residence applicants should note that admission to residence will not be offered until admission to a UNB Fredericton program has been granted by the University Registrar and that acceptance to the University does not guarantee a place in residence.

All further information on the residence application process, how to apply, residence fees, refunds and the residence contract, can be found on the UNB residence website at https://www.unb.ca/fredericton/residence/

Aboriginal Student Services and Programs

Special services and programs for Indigenous students are provided on the Fredericton campus through the Mi'kmaq-Wolastoqey Centre (micmac@unb.ca) (Marshall d'Avray Hall, Rooms 343-344). The Centre is an academic unit of the University which administers UNB Academic programs for Indigenous students and engages in research and publication in Indigenous Studies and Indigenous Education. The Centre's goal is to maintain the high quality of UNB programs for Indigenous students and to broaden the Aboriginal content and perspectives in these programs. In addition, MWC develops new programs which meet the stated needs of the Wabanaki communities of the region and contribute to their educational and professional growth.
MWC services, which are intended for the use of Indigenous students in all Faculties, include academic counseling and tutoring, access to the Mi'kmaq-Wolastoqey Resource Collection in the Harriet Irving Library, a Wabanaki student lounge, and opportunities to participate in social and other group events.

Degree credit courses are available in the Mi'kmaq and Wolastoqey languages and cultures, and in First Nations Education.
For information on the special BEd Program for First Nations students, see the Fredericton Programs Section of this Calendar.

Bridging Year Program

The Faculty of Education offers a Bridging Year Program for Indigenous students who are preparing for admission to a UNB degree program. See the program description in the Fredericton Programs section of this Calendar (Section G) under Bachelor of Education.

University of New Brunswick Associated Alumni

Students for a short time, alumni for life
For 150 years, UNB's Associated Alumni has been committed to supporting alumni and keeping them connected with their alma mater. We strive to engage alumni by nourishing pride; fostering connections between alumni, students and UNB; and enabling contribution. We are committed to telling our story, celebrating alumni success, enabling professional development and lifelong learning and helping alumni give back to pave the way for the next generation.
When you graduate, you will join a network of 95,000+ educated, talented and passionate alumni worldwide who are an integral part of the future of this university. But while you're a student, the Associated Alumni is here to support you. Thanks to our alumni, we've been able to provide more than $4.1 million in scholarships and awards to our students, including the Alumni Student Leadership Award, the Alumni Legacy Award and the Graduating Student Leaders Award.
We also offer annual Career Talks networking events to connect students with alumni professionals, and help match UNB students (or recent grads) with alumni through UNB's Ten Thousand Coffees virtual networking platform. The alumni association also sponsors students and student groups, and athletic teams and clubs for personal and professional development. UNB students can access exclusive benefits offered through the Associated Alumni, like car and tenant insurance with TD Insurance, life insurance with Manulife, and the MBNA Rewards MasterCard.
After you graduate, you are automatically a member of UNB's alumni community and will have access to U35 Young Alumni Network webinars, events, career services and exclusive benefits to help you in the next chapter of your life.
The vision of the UNB Associated Alumni is clear. We want to be a proud, inspired and motivated community of alumni and students engaged in the life and success of UNB.
UNB's Associated Alumni is here for you, at all stages of your life. Contact us any time at alumni@unb.ca or visit us at unb.ca/alumni.

University of New Brunswick Associated Alumnae

Supporting students and alumnae for over 100 years
The UNB Associated Alumnae is made up of women graduates of the university. Founded in 1910 and incorporated in 1919, the association's goal is to promote - directly and indirectly - the educational and financial interests of the university, especially those related to women graduates and undergraduates of the university. The Associated Alumnae annually awards several scholarships to current students totalling more than $20,000 per year, including an entrance scholarship, awards for part-time students and travel grants to graduate students.

Athletics

The University, through its Faculty of Kinesiology, provides opportunities for participation in a wide variety of recreational and competitive varsity athletic activities. The offices of the Faculty, together with classrooms and laboratories are located in the new Kinesiology Building. The recently completed (2011) Currie Center offers three gymnasium floors (one with spectator accommodation for 1,400), track, a dance studio, free weight room, fitness studio, spin room, strength (cardio) room), and team and equipment issue rooms. The Lady Beaverbrook Gymnasium building has the Sir Max Aitken Pool (500 spectators), 2 squash courts, and climbing wall.
The Education Gym contains a full gymnasium plus facilities for gymnastics and the material arts. There are playing fields adjacent to both gyms and to the Aitken University Centre, as well as a fourth field and running track situated on the lower campus.
The Aitken University Centre is the home of the UNB Varsity Reds and the administrative offices for this athletics program are located there. The building is widely used by the University and includes classroom and training room facilities, noon hour skating, as well as an indoor walking area (no jogging).
Thus, with the facilities of three gymnasia, one swimming pool, four playing fields, an arena, and specialty rooms, supplemented by changing facilities and a program that ranges from highly organized intercollegiate competition to casual recreational play,
UNB is able to provide sport and recreational activities for all members of the University community. For more information, see
http://www.unb.ca/studentlife/fitness-recreation.html.
The Varsity Reds Athletic Program competes in the Atlantic University Sport (AUS) Conference and U SPORTS in the sports men's and

women's basketball, volleyball, soccer, wrestling, swimming, cross country, track and field, and men's hockey. In 2018, the program will add women's hockey. For more information about varsity sports, see http://www.unb.ca/studentlife/varsity-sports.html.

Undergraduate Awards Office

The Undergraduate Awards Office administers scholarships for entering and continuing undergraduate students on both campuses. The office is located in Sir Howard Douglas Hall on the Fredericton Campus.
For regulations, general information, and award descriptions please refer to the Awards section (Section 10).

Bank

A Bank of Montreal bank machine is located on Dineen Drive in the UNB Bookstore building. There are three additional cash machines on campus (two located at the Student Union Building and a third at St. Thomas University.

Bookstores

The University Bookstore offers a wide variety of services to the student community. It is a well-stocked retail operation selling textbooks and reference books for all courses taught at UNB and STU, general interest books, special order books, a full line of stationary and office supplies, as well as university crested clothing and gift items.
Visit the Bookstore Online at unbshop.ca or contact them by telephone at 453-4664 or e-mail to: unb@bkstr.com.

Campus Ministry

The UNB Campus Ministry service is offered by a Protestant Ecumenical Chaplain. The chaplain's role on campus is to serve the spiritual needs of *all members* of the university community (this includes all those who either do or do not identify themselves as a participant in a specific religious or spiritual tradition). The chaplaincy offers spiritual counselling, mentorship and guidance, and a listening ear. We can help students connect with local churches as well as provide on campus worship opportunities. Our chaplaincy service is also a sounding board for students as they begin to integrate their university learning experiences with their life of faith. The chaplain also conducts memorial services and offers prayers at convocations and other special events. At the same time, the chaplaincy actively initiates meaningful contact with many faith groups from a wide variety of faith traditions. In doing so, we aim to foster a spirit of unity, understanding, respect, and solidarity with all those who pursue a life of spiritual grounding.
Students, staff, faculty, and members of the greater community can contact UNB Campus Ministry at the Campus Ministry Office (C.C. Jones Student Services Centre, Room 008) or by calling (506) 458-7009. Mike Bravener's email is chaplain.fredericton@unb.ca.
Campus Ministry website can be found at http://www.unb.ca/fredericton/studentservices/health-wellness/spirituality/ministry.html.

Childcare Services

College Hill Early Learning Co-Operative Ltd.

College Hill Early Learning Co-operative Ltd. Is a non-profit early learning and childcare centre which provides service for UNB and STU faculty, staff, and students. This educational play-based program enrols children aged ten months to seven years old. For more information: Phone: (506) 453-2883. Email: chelc@unb.ca Website: www.unb.ca/fredericton/chelc.

Communications Office

Communications is a bi-campus office which works with media, community interest groups, government officials, and many others. Staff provide strategic counsel, writing support for university publications, assist with ceremonies, news conferences and events, and provide media relations support to faculty and staff. The Communications Office manages UNB's daily electronic newsletters, myUNB News, and its Events Calendar, providing subscribers with current information regarding what is happening on both campuses. Website: http://www.unb.ca/advancement/communications/.

Continuing Education and Programs for Part-Time Students

The University provides a variety of courses, programs and services for individuals who need or prefer to study on a part-time basis at either campus or online. These learning opportunities are designed to meet the variety of roles of the individual whether occupational, professional, personal, familial or communal.
The following types of programs and services are offered through the UNB College of Extended Learning (CEL). Further information is available through the Fall/Winter and Summer Term schedules published by CEL, as well as its website (http://www.unb.ca/cel/index.php/).

1. **Part-time and Certificate Courses:** Credit courses are offered in many disciplines that can be applied towards a variety of degree programs or certificate programs (e.g. Applied Behaviour Analysis Certificate, Certificate in Family Violence Issues; Certificate in Administration;

Certificate in Leadership Studies; Certificate in Adult Education). UNB's degree completion program, the Bachelor of Integrated Studies (BIS) offered in partnership with UNB's Renaissance College and the College of Extended Learning, is designed for adult learners and part-time study. Academic sessions are offered throughout the calendar year, and part-time students can elect to take courses on campus or online according to their interests and needs. Responsibility for the degree/certificate courses rests with the respective academic units, which are also responsible for the academic advising. The academic advising for Bachelor of Integrated Studies students and students not enrolled in a specific program rests with the College of Extended Learning.

2. **Non-Degree Certificates and Workshops:** The College of Extended Learning offers a number of specialized certificate programs to enhance career and personal achievement. Professional development certificate programs include Management Development; Certificate in Management Essentials, Human Resources Management; Project Management; and Occupational Health and Safety. The College offers various seminars on management and leadership, human resources, project management, workplace health and wellness, conflict resolution, and behavioural intervention and autism. A wide range of courses are offered that are designed to enhance the personal and cultural enrichment of learners including leisure learning courses in writing and literature, photography, painting and drawing, languages, food and wine, and technology as well as Design Works March Break and summer programs for youth.

3. **Online Courses:** CEL, in partnership with departments and faculties, administers a variety of online courses for academic credit. CEL also offers professional development programs online.

4. **Visual Arts and Music:** The UNB Art Centre and the Centre for Musical Arts offer a variety of participation and learning (credit and non-credit) opportunities to UNB students and community members. See Fine Arts section for further detail.

5. **Financial Assistance:** Advice and information, bursaries and scholarships for part-time students is offered through the College of Extended Learning (506) 447-34

6. **Adult Learner Services:** Advice and Information for adults considering or enrolled in academic studies at UNB (506) 447-3449.

7. **Prior Learning Assessment:** In some circumstances, students/potential students may have attained university-level learning through means other than formal university courses. Information and guidelines related to UNB's Prior Learning Assessment policy are available to students, prospective students and faculty from CEL (506) 458-7976. See Section B for additional details.

8. **Adult Learners and Part-time Students (ALPS):** ALPS, UNB's student union for part-time undergraduate students, was established to respond to these student's unique concerns and issues, to provide a support network, to help create an enriched University environment, and to act as an advocate for all part-time and undergraduate students.

For additional information, contact the College of Extended Learning, P.O. Box 4400, Fredericton, NB, E3B 5A3; (506) 453-4646 (phone); toll-free 1-866-599-4646; (506) 453-3572 (fax); extend@unb.ca (email); http://www.unb.ca/cel/index.php/ (website).

Counselling Services

UNB Counselling Services offers free and confidential support to students to help with a wide range of issues including anxiety, depression, relationship difficulties, impact of traumatic events, grief, academic and stress related concerns and many others.
Using a flexible stepped-care model, counsellors are often able to offer quick appointments although wait times are longer at peak times during the academic year. There are session limits (with some exceptions) that enable staff to support a higher number of students, and community or external referrals for specific issues or for long-term intensive counselling needs are common. We offer individual and group sessions, peer supports, workshops, and online resources. In addition, counsellors provide training and education to the UNB community and collaborate closely with other UNB Student Services such as the Accessibility Centre, Campus Sexual Support Advocates, and Student Health Centre to ensure that comprehensive supports are provided to meet student needs.
Our services are available to all UNB and St. Thomas University students who are registered in a degree program.
When you meet with a member of our team for an initial consultation, one of the goals for the session will be to help you create a treatment plan that will meet your needs. Some of our treatment options include:

- Referral and assistance in accessing other campus and community resources

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

- Self-directed resources like apps, websites, and self-help books
- Supported online psycho-education and self-study
- Group counselling
- Short-term individual counselling

All staff maintain strict confidentiality in their interactions with students except in rare circumstances where disclosure of confidential information is mandated, e.g., imminent risk of harm to self or others.

Counselling Services is located on the 2nd floor of the C.C. Jones Student Services Centre. Fall and winter semester office hours are weekdays: 8:15 a.m. - 12 noon and 1:00 p.m. - 4:30 p.m. Summer hours are weekdays: 7:45 a.m. - 12:00 noon, and 1:00 p.m. - 4:00 p.m. You can contact our office at 506-453-4820 during these hours and for urgent needs after hours you can contact the CHIMO Helpline at 1-800-667-5005.

For additional information or to book an appointment please visit our website at: //www.unb.ca/fredericton/counselling

Creative and Performing Arts

UNB has a long tradition of encouraging the fine arts and has directed its resources into sustaining diversified cultural activities.

On the Fredericton campus, courses in the fine arts, offered in a variety of departments, reflect the philosophy that in a modern university the creative and intellectual aspects of life must be closely integrated. Fine arts facilities and activities include:

1. **UNB Art Centre**: Founded in 1941 by Pegi Nicol MacLeod and Lucy Jarvis, the UNB Art Centre is considered one of the oldest art centres in the Atlantic region. It remains a focus for a range of informative and stimulating exhibitions and programs. It is home to UNB's student art group, ARTZONE. The UNB Art Centre is the custodian of the UNB Permanent Collection, which totals more than 2000 artworks assembled through the generosity of alumni and benefactors. The collection is on display throughout the Fredericton and Saint John campuses. The Art Centre also houses two small gallery spaces with rotating exhibitions.
2. **The Centre for Musical Arts**, established in 1992, is under the direction of Richard Hornsby. It offers credit and non-credit courses, practice facilities, instruments for student use, a Concert Series, a Young Musicians Program, Atlantic Sinfonia, and a Summer Music Camp and an affiliated professional Music Festival (New Brunswick Summer Music Festival). There are also many ensembles available to students such as the Concert Choir and instrumental ensembles (concert band, brass ensemble, flute choir, jazz band). The Musician-in-Residence program has existed since 1962. The most recent Musicians in residence have included: Robert Kortgaard, Richard Raymond, Peter Allen, Julien LeBlanc, Geoffrey McCausland, Greg Harrison, Olivia Brayley Quackenbush and Nadia Francavilla.
3. **Drama at UNB**. UNB offers a number of courses in Drama, providing students with training in acting, directing, design, set instruction, lighting and stage management. Theatre UNB produces up to 5 mainstage productions annually at Memorial Hall, including faculty-directed class productions and student-directed productions open to participation by anyone with an interest in theatre. The activities of Theatre UNB are organized by Len Falkenstein (Director of Drama). Drama course can be found in the Drama and English sections of the Calendar.
4. **Music on the Hill**. Music on the Hill offers an annual concert series featuring international, national and regional artists. This is a cooperative endeavour of the Centre for Musical Arts and a cross-disciplinary committee with representation from UNB and STU.
5. **Film, Media, Game and Video**. A series of courses in film, media, game, and video studies is offered by the Department of English and the Department of Culture and Media Studies. These may be taken as elective courses, as part of the Media Arts and Cultures Program (housed in the Department of Culture and Media Studies) or as part of the Interdisciplinary Film Studies Minor Program. State of the art digital facilities, including a student film production studio, can be found in the Eaton Multimedia wing of Marshall d'Avray Hall, where faculty from the Media Arts and Cultures program are housed. Since 2012, the Department of Culture and Media Studies has housed an occasional Media Artist-in-Residence (filmmaker Ryan O'Toole, musician and performance artist Henry Svec, and videogame artist Chad Comeau).
6. **Writer-in-Residence**. Since the 1960s, the Department of English has hosted a Writer-in-Residence who is available to consult with writers from the university and the wider community. Early Writers-in-Residence included Norman Levine, Dorothy Livesay, Alden Nowlan, and David Adams Richards. Since 2000 the position has been held by Colleen Wagner, George Fetherling, John Steffler, Anne Simpson, Ken McKoogan, Erin Mouré, Catherine Bush, Karen Solie, Patricia Young, Gerard Beirne, Fred Stenson, John Barton, Sue Sinclair, Joan Clark, Douglas Glover, Jeramy Dodds, Naomi K. Lewis, Rabindranath Maharaj, Kerry-Lee Powell, and Colleen Murphy.

7. **The Fiddlehead Magazine**, Canada's oldest continuing journal of poetry and short stories was conceived more than three decades ago by Alfred Bailey, and grew from a few mimeographed sheets of poems by students and some faculty to include short stories and book reviews. It has been called a Who's Who of Canadian Literature, and various faculty members have edited it over the years, including Fred Cogswell, Kent Thompson, Roger Ploude, Peter Thomas, Robert Gibbs, Don McKay, and Ross Leckie. The editor as of July 2018 is Sue Sinclair. Although its emphasis is on Canadian prose and poetry, The Fiddlehead is open to good writing in English from contributors around the world.
8. **Memorial Hall** is the site for on-campus as well as touring drama and music productions. It also houses the UNB Art Centre and the Centre for Musical Arts.
9. **Special events and programs**. Concerts, music master classes and workshops, summer music programs, writer's conferences, exhibitions, poetry-readings, and drama productions are arranged or sponsored by the UNB Art Centre, the Centre for Musical Arts, Theatre UNB and Music on the Hill. Readings by visiting Canadian writers occur throughout the academic year and are organized by the Department of English.

Discrimination, Sexual Harassment and Harassment Policy

The Office of Human Rights and Positive Environment provides confidential advice on matters related to discrimination, sexual harassment and harassment. You can contact the Human Rights Officer for support and information on the options available to you including assistance with resolving an issue informally, voluntary mediation or a formal complaint. Website: http://www.unb.ca/humanrights/index.html.

The complete Policy including definitions and complaints procedures can be accessed at: http://es.unb.ca/apps/policy-repository/. Search for "harassment".

See also: http://www.unb.ca/humanrights/rights_responsibilities.html.

Employment Services

The Career Development and Employment Centre located in historic Neville Homestead, helps students find full-time degree-related employment during the academic year and summer jobs and internships. We support students in developing strong skills in career development by providing in-depth resume and cover letter review, interview guidance, and ongoing employment and career strategy advising. Organizations post thousands of employment opportunities each year on our career portal, and we work with employers to facilitate information sessions in various professional fields. Students can enrol in employment programs such as Work-Study and participate in career fairs and networking events. All students are encouraged to interact with the CDEC regularly throughout their degree program as they continue to shape their career goals. Make a one-on-one appointment or attend one of our many presentations and workshops. CDEC provides services both online (Microsoft Teams) and in-person on campus.

Student employment opportunities can be found at experience.unb.ca. Helpful tips, resources, and job search information can be accessed on our Student SharePoint. For information contact: (506) 453-4620; email: *employment@unb.ca*.

Please visit us at Neville Homestead, 58 Mackay Drive.

English as a Second Language

Established in 1950, the UNB English Language Programme (ELP) is one of the oldest English Second Language schools in Canada. ELP offers courses to assist non-Anglophones to function in an English milieu. In all formats, the language of instruction is English; all communication is to be carried on in English as well. Classes for all proficiency levels, beginner to advanced, are offered. Students are placed according to their levels.

A proven way to learn English with over seven decades of success.

A. **(Total Intense) SUBMARINE© Immersion Formats:** This approach incorporates around the clock immersion, with classes and activities seven days a week. A Commitment Contract (Pledge) to function only in English for the duration of enrolment is the basis for success of these formats.
   1. Large-group sessions held over the course of five weeks are offered May/June and July/August.
B. **English for Academic Purposes**: A variety of programs are available to equip students with the English language skills they need to function in a university setting.
   1. Program of Academic English Preparation (PAEP) - UNB's bridging program for undergraduate students; available each academic term. Receive academic credit from select faculties. http://www.unb.ca/cel/elp/english/paep-english.html
   2. Intensive English Term Format - 35+ hours per week from September-December, January-April, and May-June.
   3. Intensive English Term Segment - 35+ hours per week from September-October and January-February.

4. Evening classes, a three-hour block per week; undergraduate and graduate, credit and non-credit; September-December and January-April.

C. **Daytime Personalized Formats**: Private and small-group classes offer flexibility for busy schedules.
   1. One-on-one tutorial classes are available to meet individual needs.
   2. Week-long classes (choose from 10, 15, and 25 hours per week).

ELP offers several specialized programs and services, such as assessment services, professional development workshops and custom-designed group programs.
For information and registration, please contact: UNB College of Extended Learning English Language Programme. Telephone: (506) 453-3564. Email: *ELP@unb.ca*. Website: *go.unb.ca/elp*

Faculty Advisors

1. It is very important that students consult with their faculty in planning their program.

2. Faculty advisors are available to all students in the university, and are available for consultation during student's full stay on the campus.

3. If the students wish to see a faculty advisor they should contact their respective Faculty or Deans Office and ask to be assigned a faculty advisor. Each faculty has its own procedures for assigning students to faculty advisors.

4. In the faculty of Science, academic advising in the first two years is done primarily through the core ARTS 1000 course. ARTS 1000 tutorials leaders also provide academic advising. Students without an ARTS 1000 advisor will see an Associate Dean for counselling. When students select their field of study departmental advisors will be assigned.

Financial Aid

Contact the UNB Financial Aid Office for information on funding your educational experience. The Financial Aid Office can provide assistance to students on the provincial student loan application process; an explanation of their government assessment notice; wish to initiate an appeal for further student loan assistance; need information on Canada Student Grants, provincial grants, and; terms of repayment.
Other services provided by the Financial Aid Office include, but, are not limited to:

1. Bursary support (non-repayable assistance) at the undergraduate level for students with demonstrated financial need.
2. Limited bursary support for graduate students with demonstrated financial need.
3. Employment opportunities through a subsidized work program designed to assist students with the costs associated with post-secondary study. The program will also provide students with an opportunity to gain valuable skills/experience within an on-campus part-time employment situation.
4. University small loan program that offers low-interest loans to full-time students who have successfully completed one term at UNB. Maximum loan award for an academic year is $800.00.

For application information and deadlines, please contact the Financial Aid Office of UNB, first floor C.C. Jones Student Services Centre, (506) 453-4796 or email: finaid@unb.ca and website:
http://www.unb.ca/fredericton/studentservices/financial-aid/.
For information and applications for part-time student's awards, please contact the College of Extended Learning at (506) 453-4818 or email to: ptaward@unb.ca.

Food Services

On-campus food services are provided: In residence dining halls with residence students having the choice of dining plans with varying combinations of structured meals and discretionary cash.
Retail dining outlets are located in the Student Union Building, Head Hall, Harriet Irving Library, IUC, Tilley Hall and D'Avray Hall
General information regarding food services, vending and beverage contracts may be obtained by calling (506) 453-4527.
Information concerning planning an on-campus event involving food or beverage, or hosting a conference on campus may be obtained by emailing conferenceservices@unb.ca.

Graduate Studies

The University offers a wide range of post-graduate programs through its School of Graduate Studies. The degree of Doctor of Philosophy is offered in Graduate Academic Units in the departments of Biology, Chemical Engineering, Chemistry, Civil Engineering, Computer Science, Earth Sciences, Education, Electrical Engineering, English, Forestry and Environmental Management, Geodesy and Geomatics Engineering, History, Interdisciplinary Studies, Mathematics and Statistics, Mechanical Engineering, Physics, Psychology, and Sociology.

Master's degrees are offered in Graduate Academic Units in almost all departments. Graduate studies are carried out on both campuses of the University.
Detailed information concerning the programs offered, financial assistance for graduate students, and regulations governing admission and degree requirements will be found in the School of Graduate Studies Calendar available on request from the School of Graduate Studies (email: gradschl@unb.ca) or on the Internet at http://www.unb.ca/gradstudies/.

Health Insurance, Student

Basic Health Coverage

Basic health and benefits for Canadian students are provided by the Medicare Plan of their province of permanent residence. Students must ensure that they are registered and in good standing with the Hospital Commission of their province.
Beginning September 1, 2017 full-time international students with student visas qualify for New Brunswick Medicare coverage. Some exceptions apply. For those without or awaiting Medicare coverage, basic health coverage for international students is provided through an insured plan administered by the University. International students on both campuses should refer to the following website for information concerning opt-out dates, refunds, etc.:
http://www.unb.ca/financialservices/students/healthinsurance.html.
International students with landed immigrant status do qualify for Medicare and hospital benefits and must register with the Province immediately upon arrival. Please also refer to the above website for more information.

Supplementary Health and Dental Coverage

All full-time students on both campuses are automatically enrolled in the Student Health/Dental Plan. The Plan is designed to supplement the coverage provided by the provincial Medicare plans, or by the plan for international students. Administered by the Student Union on the Fredericton campus, and by the Student Representative Council (SRC) on the Saint John campus, the Plan provides students with a comprehensive set of extended health and dental benefits including 80% coverage on prescription drugs, paramedical services, ambulance services, etc. The coverage runs from September 1 through August 31. Students wishing to enroll dependents must contact the Student Union/SRC to make arrangements (Fredericton students: 453-4955; Saint John students: 648-5684).
Students providing proof of alternate coverage may opt out of the Student Health/Dental Plan. To opt out, students must complete an online opt-out form (https://wespeakstudent.com/). Students who opt out will be credited for the Health/Dental fee. The deadline to complete the opt-out process is September 23, 2022 for both campuses, with no exceptions beyond this date. It is the responsibility for the student to follow all steps and adhere to the deadline in order to receive credit. Students must opt out annually as opting out does not automatically carry forward from year to year. The opt-out deadline for new students starting in January (those who were not full-time in September) will be January 27, 2023.
Please refer to the Financial Information section of this calendar for Health Insurance fees and payment deadlines. Information can also be found online at
http://www.unb.ca/financialservices/students/healthinsurance.html.
For further information about the Plan, please contact:
Fredericton Student Union, Room 102, Student Union Building (506) 453-4955 or Saint John Student Representative Council, Room 213, T.J. Condon Student Centre (506) 648-5684.

Student Health Centre

The UNB Student Health Centre is committed to providing quality primary health care. Open year round to full-time UNB and STU students, we assess and manage a wide variety of medical problems. Services are **confidential**.
Location: C.C. Jones Student Services Centre, 3rd floor, 26 Bailey Drive
Phone: (506) 453-4837
Fax: (506) 452-6087
Email: shc@unb.ca
Phones are answered:
Monday-Friday: 8:30 a.m. - 3:30 p.m.
CLOSED DAILY from 11:30 a.m. - 1:15 p.m.
Hours of operation:
Fall and Winter:
Monday to Thursday, 8:15 a.m. - 4:00 p.m.
Friday: 8:15 a.m. - 3:30 p.m.
CLOSED DAILY from 11:30 a.m. - 1:15 p.m.
Summer:
Monday to Friday, 8:15 a.m. - 3:30 p.m.
CLOSED DAILY from 11:30 a.m. - 1:15 p.m.

Information on alternate health services (i.e. after hours clinics, emergency care, dental & vision, pharmacy) is available on our web site: http://www.unb.ca/fredericton/studentservices/health-wellness/health-centre/index.html.

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

Information Centres

Advocacy Centre

The UNB Student Union-run Advocacy Centre is a place where undergraduate students can access free, confidential legal information from student advocates. If they cannot provide you with specific information, they will find the information for you, or direct you to somewhere that the information can be provided. The advocates are a prime avenue to access Universal Legal Coverage. The Advocacy is located in room 31 in the SUB. Call 447-3068 or email to: univaff@unb.ca for more information.

Welcome Center

The Student Union-run Welcome Center is located in room 102 of the Student Union building. Photocopies, fax service, as well as stationary and other merchandise, are available. Also offered are Bus passes, campus maps, and tickets for most activities. Call (506) 447-4955 for hours and information.

University Women's Centre

Governed by a Board consisting of various members of the UNB, STU and Fredericton Community, the University Women's Centre opened in the fall 2002. Located in room 129 in the Student Union Building, the centre provides information, space and support for all members of the university community. For more information, phone (506) 452-6124 or email to: women@unb.ca.

Information Technology Services (ITS)

Information Technology Services (ITS) provides students with the technology support, information and services they need to live and study at UNB. This includes computer lab services, laptop support, wireless networking, email and calendaring services, and much more.

IT Service Desk

The IT Service Desk is there to help with any questions or issues related to your UNB IT accounts, email, wireless, software, printing, access to web services, spam or phishing emails, IT security or general IT questions.
Fredericton campus - Phone (506) 457-2222, email itservicedesk@unb.ca or drop by in person at the Harriet Irving Library (HIL), Learning Commons from 8 a.m. to 10 p.m. daily (unless the HIL is closed).
Saint John campus - Visit the Student Technology Centre in the Hans W. Klohn Commons (first floor), phone (506) 657-2222, or email itservicedesk@unb.ca.

myUNB Portal

The myUNB Portal gives you single sign-on access to all your personal IT services at UNB, including your UNB email and calendar (O365), D2L Brightspace, class and exam schedule, and term marks. It also keeps you informed about UNB cancellations, upcoming events, and much more. Log in at https://my.unb.ca.

Using your Devices on Campus

For instructions on how to setup wireless, printing, email and more on your laptop, desktop, smartphone or tablet, visit the ITS website (http://unb.ca/its). The site also provides details on the various IT services available to you through ITS, such as how to download Microsoft Office (Word, Excel, PowerPoint, etc.) for free on all your devices, upcoming scheduled IT outages, how to get IT Help, and more.

ITS on Twitter and Facebook

Want to stay in the loop about current and upcoming IT outages, news and events? The ITS Twitter and Facebook pages keep you up to speed on what's going on with technology on campus and also provide you with another way to send a quick question or comment to the IT Service Desk.
Twitter- https://twitter.com/UNB_ITS
Facebook- https://www.facebook.com/UNBITS

Print Services (Fredericton Campus)

Print Services is a full service, professional printing facility providing UNB students, faculty and staff with a wide variety of high quality printing services. Located in Marshall d'Avray Hall (room 106), their services and products include black & white and colour copying and printing, letterhead and business cards, brochures and flyers, laminating, posters and signage, and more. For more information, including a price list and contact information, visit www.unb.ca/printservices.

International Student Advisor

Website: www.unb.ca/fredericton/studentservices/international/index.html
The International Student Advisor's Office (ISAO) is on campus to provide advice and support to international students throughout their degree program. ISAO support services for international students include: information workshops to help students upon their arrival in Fredericton, personal, financial and cultural advising, and Workshops, information on Canadian immigration, and assistance with applications for work-permits, visa and renewal of study permits. The International Student Advisor's Office is located in C.C. Jones Student Services Centre and is open during the regular campus office hours.
For more information contact: Phone: (506) 453-4860; Fax: (506) 453-5005; email to: isao@unb.ca.

Libraries

UNB Libraries offers access to a wealth of research materials in both electronic and print formats. There are four libraries on the Fredericton campus–Harriet Irving Library, the Science & Forestry Library, the Engineering & Computer Science Library, and the Gerard V. LaForest Law Library. The campus library at UNB Saint John is located in the Hans W. Klohn Commons.

The current library collection comprises over one million print volumes, three million microforms, over 250,000 government documents (NB, Canada, and international) and maps, periodicals, DVDs, rare books, manuscripts, the University Archives, as well as a number of special collections. UNB Libraries also subscribes to electronic resources, including over 20,000 full-text journals, 100 major research databases (indexes & abstracts), over 200,000 electronic books, local and national newspapers, and a variety of reference materials. The online library catalogue, UNB WorldCat, provides access to materials held in any of UNB's libraries, including materials at Hans W. Klohn Commons.

Services include research consultations with librarians, and assistance with electronic & print resources, either in person, by phone or online. Technical support is available via the IT Service Desk at Harriet Irving Library and in the Hans W. Klohn Commons. Instruction sessions are offered to support students in all levels of study, and library orientation tours are available upon request. All libraries offer group study rooms, wireless access, laptop computers, study tables and individual carrels. Harriet Irving Library's John B. McNair Learning Commons offers a variety of learning environments including options such as comfortable group or individual seating, academic support, computer workstations, an Accessibility Centre, a Digital Media Editing Studio and the Commons Café.

Further information including opening hours is available on the library website https://lib.unb.ca/.

Math Learning Centre and Writing and Study Skills Centre

Math Learning Centre

The Math Learning Centre provides individual tutoring, group tutorials, workshops and exam review sessions for all students taking first year Math courses. Services are free to full-and part-time UNB students. The centre is located in Tilley Hall 422. Call (506) 453-4768 for an appointment.
For more information please go to www.math.unb.ca/~mathhelp/

Writing and Study Skills Centre

The Writing and Study Skills Program (Harriet Irving Library, room 410) offers free individual and small group tutoring for full and part-time UNB Fredericton students. Topics include academic writing, examination preparation, effective reading strategies, and time management. The Centre offers evening drop-in tutoring; check the Centre's website for current hours and locations: go.unb.ca/wss.

Research

Seventy per cent of all university research in New Brunswick is conducted at UNB. There are many opportunities for undergraduate students to engage in research with faculty members, receive funding for their pursuits, and continue their research and education at UNB through graduate studies. A number of interdisciplinary research programs exist in which faculty members and students from various Departments collaborate to investigate problems of mutual interest. Active research units include the Canadian Research Institute for Social Policy, Canadian Rivers Institute, Centre for Coastal Studies and Aquaculture, Canadian Centre for Geodetic Engineering, Centre for Nuclear Energy Research, Canadian Institute for Cybersecurity, Gregg Centre for the Study of War and Society, Information Technology, Institute of Biomedical Engineering, Limerick Pulp and Paper Centre, Muriel McQueen Fergusson Centre for Family Violence Research, and the Wood Science and Technology Centre, to name a few. The Office of Research Services, the research administration and development unit, facilitates the undertaking of research within the university on behalf of industry, government, and other clients and sponsors. It also promotes the application of research results to industrial problems and, where appropriate, the transfer of knowledge and technology through various types of transfer arrangements. Further information concerning research activities at the University may be obtained from the Office of the Vice-President (Research): www.unb.ca/research/.

Residences

We are pleased you are considering living in residence at UNB Fredericton. Residence offers numerous opportunities to meet new people, become engaged in your new community, and access to a number of supports that are not available off-campus. Living in residence will provide you with valuable out-of-classroom experiences that will benefit you for years to come. Our residences are conveniently located to classes and all UNB services, and everything is included!
For more information on our residences, please visit our webpage at: http://www.unb.ca/fredericton/residence.

Residence is available for UNB students taking classes during the summer. Information on our summer residence program is available at http://www.unb.ca/fredericton/conference-services/stay/summer-residence.html.

Security and Traffic

Some of the services provided by our department include:

- Campus Patrols
- Campus Inspections
- Proactive Crime Prevention Strategies
- Residence Security

In addition to the physical security of the campuses, security is responsible for parking and traffic control. Parking regulations are in effect and students, faculty and staff and visitors must register their vehicles with the Security and Traffic office and purchase a parking permit to park on campus. The Security and Traffic Department personnel will gladly address questions relative to parking.
Parking violations will result in fines. Violation tickets that are not paid within seven days could result in having the violating vehicle towed from campus without notice and at the owner's expense and risk. Vehicles left contrary to the parking regulations constitute or create a traffic hazard and may also be towed away at the owner's expense and risk without prior notification. Non-payment of parking fines may result in withholding of grades and transcripts or deductions from financial awards to students.
For further information on parking regulations, services provided, as well as information on safety and security tips, refer to the UNB website at http://www.unb.ca/fredericton/security/.

Summer Sessions

Fredericton and Saint John Campuses
The University offers several academic sessions (3 and 6 week blocks) during Summer Term from May through August. Courses are offered in a variety of disciplines, durations, and formats.
Summer Term study allows current undergraduate and graduate students to progress throughout their program in a timely manner. New and visiting students can also participate in UNB offerings during Summer Term. Professional development opportunities exist for teachers, as well as specialized experiential programs.
As part of its overall Summer Term on the Fredericton campus the University also offers programs through the English Language Programme for those wishing to increase their facility in English: an academic preparation course, Intensive English Term Format (May-August), two five-week residential immersion sessions (Submarine© formats: May-June and July-August) for adult learners and one four-week residential language camp for high school students during July-August. Contact the English Language Programme, College of Extended Learning for further details.
In addition to the degree-credit courses, a variety of cultural and related educational activities (e.g. Summer Music Camp and Summer Music Festival) are provided.
Schedules for Summer Term are available in the spring of each year. Registration opens on March 1.
For further information, contact the College of Extended Learning, UNB Fredericton, P.O. Box 4400, Fredericton, N.B. E3B 5A3, (506) 453-4646 (phone), 1-866-599-4646 (toll-free), (506) 453-3572 (fax), extend@unb.ca (email), http://www.unb.ca/cel/ (website). In Saint John, contact the Registrar's Office, UNB Saint John, P.O. Box 5050, Tucker Park, Saint John, N.B. E2L 4L5, (506) 648-5670 (phone).

Student Centre

The Student Union Building (SUB), completed in January 1969, is the result of student-administration cooperation. The cost was shared among the students of the University of New Brunswick, Saint Thomas University, and the former Teachers College, with the University of New Brunswick matching the student contribution.
The SUB houses the offices of several student groups and organizations. The University of New Brunswick student newspaper office and the student government offices for UNB and STU are located in the office wing as well as CHSR-FM, the student radio station. In the main part of the building there is a meeting room, a lounge area (Blue Lounge), a large cafeteria, The Cellar Pub & Grill, the Welcome Centre, the 203 Centre for Gender and Sexual Diversity, the University Women's Centre, the Ballroom and SUB Office (the main administrative office for the building). For the convenience of the students there are also several retail outlets such as a hair styling salon, automated banking machines, a sundry shop and an ATM.

Student Services

Student Services helps students to achieve academic and personal success and to develop in them the knowledge, skills, and attitudes that will empower them to live our motto "dare to be wise". All students are encouraged to access all services that would help them succeed. Student Services includes the following units:

- Student Health Centre
- Counselling Services
- Student Advocate
- Writing and Study Skills Centre
- Career Development and Employment Centre
- Student Accessibility Centre
- Academic Support
- Residential Life
- International Student Advisor's Office
- Student Union Building
- Finance and Operations
- Conference Services

Visit the Student Services website for more details:
http://www.unb.ca/fredericton/studentservices/

Students with Disabilities

In accordance with both the Canadian and New Brunswick Human Rights Act, the University of New Brunswick provides reasonable accommodations to individuals with disabilities.
Physical Accessibility
Most buildings on the UNB Fredericton campus include accessible entrances and washrooms; however, due to their age, some buildings on campus are not fully accessible. Detailed information on building accessibility can be obtained from the Student Accessibility Centre at (506) 453-3515 or unbsac@unb.ca
Academic Accommodations
The University provides Academic Accommodations necessary for students with disabilities to participate fully in their program of study. Please contact the Student Accessibility Centre at (506) 453-3515 for more detailed information, or visit the website at http://www.unb.ca/fredericton/studentservices/academics/accessibility/.

UCard (UNB Photo ID)

UCard is your official UNB Photo ID Card. Much more than a simple ID, this card gives you discounts around town, access to library resources and secure areas, entry to gym facilities, meal plans, printing, entrance to events on campus, purchases with UCard Cash and more. For more information, visit www.unb.ca/ucard or follow us on social media.
www.facebook.com/UNBUCard www.twitter.com/UNBUCard.

SAINT JOHN CAMPUS

Accommodation

Residences
UNB Saint John offers three on-campus residences overlooking the beautiful Kennebecasis River. All housing at UNB Saint John is non-smoking, co-ed and security locked.
The Dr. Colin B. Mackay Residence opened in September 2003 and was designed with input from our very own students. It offers 170 beds in the form of spacious double suites for independent style living. Suites include two single bedrooms, kitchenette, complete with microwave and fridge, as well as a private three-piece bath that is shared only with your suitemate. Each room is furnished with a double bed, and desk set.
The Barry and Flora Beckett Residence is our newest addition, offering UNB Saint John students a brand new style of room known as adjoining singles. The larger than normal bedroom includes an adjustable double bed, a manager's desk and chair, a premium dresser and a semi-private washroom. The semi-private washroom includes a shared shower and toilet, with students having their own private sink with ample storage. A limited number of private singles are also available. The Barry and Flora Beckett Residence offers 104 beds.
The Sir James Dunn Residence offers 79 beds with single and double rooms available, each furnished with a dresser/wardrobe and desk set. With newly updated washrooms, Sir James Dunn gives you a modernized living in residence environment.
All of our residences have standard house amenities include furnished TV rooms and study lounges, Rogers Ignite Internet and free laundry facilities. If you prefer a more subdued, quiet lifestyle, the residence also has a section that offers a 24-hour quiet policy. All residences have an indoor connection to the campus.
Food Services and Residence Fees
Residents of the Sir James Dunn and Barry and Flora Beckett residences are required to purchase a $3400 tax free meal plan which will be incorporated into the total residence fees as set out in the residence fees schedule. Students living in the Dr. Colin B. Mackay residence have three meal plan options to choose from: $1,000, $1,400 and the tax free $3,400. Meal plans are administered on a declining balance basis. For example, this means that if a meal plan that was valued at $1,700 per term were purchased, the student's account would be credited with this amount toward food services. The cost of any purchases at the Baird Dining Hall, Whitebone Pizzeria, or commons café during the term would be deducted from the balance until a zero balance is reached. Ideally, a zero balance is

reached at the end of each term; however, food service accounts can be supplemented at any time in increments of $25 or greater. It is important to keep in mind when choosing a meal plan that although an account can be supplemented at any time, any balance remaining at the end of April is non-refundable.

Residence Activities

Living in residence is so much more than a convenient place to live on campus! We strive to foster a safe, comfortable, fun and accepting home for students. Residence Life's goal is to provide an atmosphere conducive to a safe and healthy learning environment while providing students with the opportunity to learn, communicate and interact within a community. This goal is achieved through engaging Residence exclusive events hosted by Residence Life staff and Resident Assistants.

Applying to Residence

Applicants who are interested in on-campus living accommodations at UNB Saint John must complete the application form available at http://www.unb.ca/saintjohn/residence/index.html. Residence applicants should note that acceptance to UNB Saint John does not guarantee a place in residence. Additionally, acceptance into residence will not be offered until admission to UNB Saint John has been granted. Once admission is granted, it is encouraged to apply to residence. Once you start the application process please keep in mind you will be required to pay your $500.00 deposit in order to secure your place in residence. Please have your credit card readily available.

For information on the residences, please contact: Residence & Conference Services, - e-mail to: res@unb.ca, telephone (506) 648-5755, Monday - Friday 8:15 a.m. - 4:00 p.m. and also visit our website at http://www.unb.ca/saintjohn/residence/houses/index.html.

Athletics

Athletics, Recreation and Wellness

The G. Forbes Elliot Athletics Centre features a 30,000 square foot playing surface with a versatile pulastic floor and showcase hardwood main court. The Athletics Centre has space for six badminton courts, three basketball courts, three volleyball courts, two tennis courts and one-track & field training lane. The spacious layout is perfect for soccer, ultimate Frisbee, pickle ball and other activities. The bleachers have seating for 560 spectators to watch the Seawolves sports teams and other community events.

The ground floor includes a weight training room, men's and women's changing and shower areas, an equipment storage room, a medical room and a room for officials. Athletic and Safety & Security offices, a classroom, multipurpose room and fitness room are located on the second floor.

The G. Forbes Elliot Athletics Centre serves the competitive and recreational sports and physical activity needs of UNB Saint John students, faculty and staff, as well as many community groups and events.

Canada Games Stadium

The Canada Games Stadium is one of the finest sports facilities in Atlantic Canada. A legacy of the 1985 Jeux Canada Games, the stadium features a 400-metre, eight-lane track, an artificial turf field, javelin and shot put throwing areas, an equipment storage building, a state of the art lighting system, spacious changing rooms with showers, an officials room and medical room. There is permanent grandstand seating for 2,500 people. Many prestigious local, provincial, regional and national sports events take place at this facility.

Please consult the ARW Department's web-site for further information on the varsity programs (http://www.unb.ca/saintjohn/athletics/).

Bank

A Bank of Nova Scotia banking machine is available in the lobby of the Student Centre.

Bookstores

The University Bookstore on the Saint John campus stocks all textbooks and course-related materials for students to purchase. In addition, it offers a full line of reference and general interest books (with a special order service for books not in stock), school and office supplies, computer hardware, software and peripherals, as well as crested university clothing and giftware. The Bookstore is located on the main floor of the Ward Chipman Library building, and is open year-round: 8:30 am - 4:00 pm Monday to Friday. Visit the Bookstore online at: https://www.bkstr.com/newbrunswickstjohnstore/home or contact them by telephone (506) 648-5540.

Campus Ministry

The Campus Ministry is composed of a number of clergy and spiritual advisors of different faiths in the Saint John area. Their role on campus is to minister to the religious and spiritual needs of all members of the university community (this includes all those who either do or do not identify themselves as a participant in a specific religious or spiritual tradition). They offer spiritual counselling, mentorship and guidance, a listening ear and non-judgmental presence. The Campus Ministry sponsors various activities throughout the year.

Students, staff, and faculty can contact UNB Campus Ministry at the Campus Ministry Office (Oland Hall, G08) by emailing unbsj.multifaith@unb.ca, or by messaging us on Facebook @unbministry. The Campus Ministry website can be found at http://www.unb.ca/saintjohn/studentservices/health/ministry.html. The Ministry motto is: "God cares, so do we."

Communications Office

Communications is a bi-campus office which works with media, community interest groups, government officials, and many others. Staff provide strategic counsel, writing support for university publications, assist with ceremonies, news conferences and events, and provide media relations support to faculty and staff. The Communications Office manages UNB's daily electronic newsletters, myUNB News and myUNB Student News, and its Events Calendar, providing subscribers with current information regarding what is happening on both campuses. Website: http://www.unb.ca/advancement/communications/.

Continuing Education and Programs for Part-Time Students

The Saint John campus operates an integrated program which treats part-time students on essentially the same basis as full-time students. Credit courses are under the administrative control of the Faculties, and are scheduled at the time of day or evening which makes them most accessible to both the full-time and part-time clientele. Academic advising for part-time students is available through the Departments and Faculties, as it is for those in full-time studies.

In addition to degree programs, the campus offers certificate programs in Data Analysis, and in Business Administration, Human Resource Management, Accounting, Electronic Commerce, Economics, Financial Markets, Communication and Professional Writing and General Studies, which are of particular relevance to part-time students. All courses offered towards a certificate are degree-credit courses and students who subsequently enroll in a degree program will normally be able to count courses taken towards the certificate as credits towards the degree. Another certificate program offered is the Certificate of Proficiency in French, Level I and II, which is open to students whether or not they are currently working towards a degree.

A variety of non-degree courses is also offered to meet the needs of professional associations and other groups.

The Writing Centre; Counselling; Employment Liaison; information on scholarships and bursaries for part-time study; student success strategies; and financial advising for part-time students are available at the Student Services Centre, ground floor of Philip W. Oland Hall. Phone (506) 648-5501.

The campus offers a Math Centre available for all full-time and part-time students regardless of degree program. Phone (506) 648-5776.

Saint John College offers English-Second-Language Training Courses for those who require further instruction in English in order to become proficient and to communicate and function effectively in English at the post-secondary level. In addition its core programs, including English for Academic Purposes EAP, English as a Second Language Support, and the Pre-MBA Program, Saint John College offers the following courses and services:

1. Professional Development Programs which offer opportunities for professionals to develop their skills, to network, generate new ideas, build community connections, develop innovative practices and build professional and personal strength.
2. Custom Second Language Courses (non-credit) which are specially designed for groups of students and professionals with varying needs and interests. These courses range from off-site corporate training to on-site specialty programs such as English Immersion.
3. Official English Language Testing Saint John College is an official testing site for the CAEL (Canadian Academic English Language) Assessment, for students requiring an official test of English proficiency. The CAEL Assessment is give on-site at regular intervals and results are accepted at most Canadian post-secondary institutions.

Information about degree-credit courses/certificate programs may be obtained from the Chair of the appropriate Department, the Dean of the Faculty of Business or, for Education courses, from the Education Coordinator for the campus, (506) 648-5674.

Counselling Services

UNB Counselling facilitates the academic and personal development of University of New Brunswick and Dalhousie Medicine New Brunswick students by providing a range of short-term mental health services to undergraduate and graduate students. These services aim to promote a healthy and inclusive community through relationship building, education, crisis intervention, and support.

UNB Counselling proves a wide range of therapeutic interventions using a brief therapy model. Clinical services include an initial consultation, short-

term individual therapy, group counselling, psycho-educational programs, workshops, and online resources. Students are encouraged to schedule an initial consultation appointment to chart a path to meet their needs. Issues commonly addressed through brief individual or group counselling include:

- Mood or anxiety issues such as depression, anger, stress, self-defeating behaviours, perfectionism, social anxiety, and performance anxiety
- Academic-related issues such as low motivation, self-discipline, procrastination, and managing interpersonal difficulties with mentors
- Career concerns such as program fit, values and interests clarification, and career/life decisions
- Relationship issues such as break-ups, interpersonal conflicts, family problems, loneliness, communication, and assertiveness training
- Self-esteem and body image concerns
- Adjustment difficulties such as life transitions, new life circumstances, and cultural adjustments
- Identity exploration such as gender, sexual orientation, personal, and/or cultural
- Grief and loss
- Substance use such as concerns related to mild or moderate alcohol or other drug use/abuse
- Trauma such as sexual assault, interpersonal violence, and developmental trauma

UNB Counselling is not designed nor intended to provide ongoing support to students with significant mental illness or complex mental health needs. Such students should access treatment by mental health professionals in the public mental health system.

To schedule an initial consultation appointment, please e-mail sjcounsellor@unb.ca.

Campus Sexual Assault Support Advocate

Our Campus Sexual Assault Support Advocate (CSASA) supports students and UNBSJ community members directly or indirectly impacted by sexual violence. The CSASA is available for confidential consultation, counselling, and advocacy.

Counselling and advocacy are trauma-informed, and you choose the support you would like to receive. Supports include:

- Counselling
- Consultation for medical options and/or reporting process
- Support with academic accommodations and on- and off-campus referrals and resources
- Sexual violence disclosure and bystander intervention training for the university community

For more information or to schedule an appointment, please email csasa@unb.ca

Discrimination, Sexual Harassment and Harassment Policy

The Office of Human Rights and Positive Environment provides confidential advice on matters related to discrimination, sexual harassment and harassment. You can contact the Human Rights Officer for support and information on the options available to you including assistance with resolving an issue informally, voluntary mediation or a formal complaint. Website: http://www.unb.ca/humanrights/index.html. The complete Policy including definitions and complaints procedures can be accessed at: http://es.unb.ca/apps/policy-repository/. Search for "harassment".

See also: http://www.unb.ca/humanrights/rights_responsibilities.html.

Employment Services

The Student Employment Services on the Saint John Campus assists students and recent graduates in obtaining permanent, summer and part-time employment. Services for students include: assistance with resumes and cover letters, job search strategies, interview preparation, work-study programs, employment counselling and labour market information. Employer services include posting job notices on-campus and assisting with employer information sessions for students and graduates. Students and graduates are encouraged to contact the Student Employment Centre early in the academic year to review job opportunities and take part in the fall recruiting campaigns offered by many employers. The Student Employment Centre provides service throughout the year and is located in Student Services, G18 and G19, Oland Hall. For information contact (506) 648-2308/2309 or e-mail ses.sj@unb.ca.

English as a Second Language

Saint John College offers English language training courses for students who need to improve their language skills in order to communicate and function effectively in English in university or college programs. In addition to its core programs, including English for Academic Purposes (EAP), English as a Second Language Support, and the Pre-MBA Program, Saint

John College offers customized courses and programs such as English for specific purpose and immersion programs, upon request.

Saint John College is also an official testing centre for several tests, including the CELPIP (for immigration purposes), the CAEL (Canadian Academic English Language) Assessment (for university/college admission) and the IELTS (International English Language Testing System, both general and academic) test for students who need to take an official test of English proficiency. More information on testing services can be found at: http://www.unb.ca/saintjohn/sjcollege/language.html

Financial Aid

The UNB Saint John Financial Aid Office provides advice and answers questions on all matters relating to financial aid including: government student loans, student line of credit, University and Emergency funding, bursaries and scholarships, as well as funding by outside agencies. Information is available for both full and part-time students. Budgeting and financial advising is another of our important services.

For more information or to make an appointment, contact Renea Leskie, Student Services, Oland Hall, G15, (506) 648-5765 or email: finaidsj@unb.ca.

Fine Arts

Fine Arts Cultural activities on the Saint John campus are presented under the auspices of the Lorenzo Society (http://www.unb.ca/saintjohn/arts/lorenzo/). The Lorenzo Society organizes or sponsors special events and programs, concerts, writers' conferences, exhibitions, and a reading series.

The Lorenzo Reading Series hosts readings by major Canadian authors. Lorenzo readings typically take place on the UNB Saint John campus and are free of charge. See http://www.unb.ca/saintjohn/arts/lorenzo/readingseries.html. The Lorenzo Music Series offer a series of recitals by the Saint John String Quartet and concerts throughout the academic year.

Food Services

On the Saint John campus, food services are located in the Thomas J. Condon Student Centre and Ward Chipman Library Building. Information regarding catering, food services or hosting a conference on campus may be obtained from the Residence & Conference Services by calling 648-5755 or http://www.unb.ca/saintjohn/conferenceservices/dining/index.html Chartwell's done on campus website: http://dineoncampus.ca/UNBSJ.

Health Services

The Student Health Centre is located behind the G Forbes Elliot Athletics Centre in the back parking lot. The Health Centre offers doctor and nurse practitioner/educational health services for students. Please contact the Health Centre at 648-5656 or email behealthy@unb.ca or visit the website at http://www.unb.ca/saintjohn/studentservices/health/healthsections/index.html for a list of clinics, services and hours of operation.

Information Centres

At the student-run Campus Information Centre, located in the Thomas J. Condon Student Centre, you can obtain general information, find out what is happening on campus, meet other students, send faxes, get photocopies, pick up bus schedules, maps, job postings and much more.

IT Help/Technical Support

The Student Technology Centre (on the first floor) can help with many technological needs including basic hardware setup and maintenance, software support (including Microsoft Office), etc. Email itsservicedesk@unb.ca or call 1-506-657-2222.

International Student Advisor

International Student Advisor Office

The International Student Advisor provide strong support services to ensure International Students are enable to focus on their educational efforts and be successful while studying at UNB Saint John. We provide assistance to international students on:

- Immigration issues
- Orientation and pre-arrival information
- Workshops and social events

International Student Advisor Office is located in Oland Hall, Room G14. Email: interstuserv@unb.ca. Website: www.unb.ca/internationalservices.

Student Abroad Coordinator

Go Further! Study Abroad! Information and advice on study and work abroad opportunities for UNB Saint John students are available. UNB Saint John offers a number of financial awards each year to financially assist Canadian students to study abroad. To find out more, check out the website at www.unb.ca/global, or phone (506) 648-5618 or email to: studentabroad@unb.ca.

International Development Project Coordinator

237

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

The International Office at UNB Saint John provides support to faculty, staff and students involved with international development projects. Present initiatives include projects in China, Vietnam, Africa and Cuba. The Coordinator is also available to assist faculty, staff and students wishing to develop opportunities and proposals to work, study or do research in developing countries. An active World Universities Services of Canada chapter is also coordinated in this office. For more information on international development, contact: (506) 648-5775 or email to: ILO@unbsj.ca.

Libraries

The UNB Saint John campus library is housed in the Hans W. Klohn Commons. The library provides access to a wealth of scholarly research materials in both print and electronic formats, including more than 130,000 print books, 700,000 eBooks, and 30,000 electronic journals. These can be accessed through the UNB Libraries catalogue and more than 100 research databases available on the UNB Libraries' website found at lib.unb.ca.

Through the library's Inter-Library Loan program, students at UNB Saint John have access to more than 1 million books from the libraries on the UNB Fredericton campus and, through the Document Delivery program, can request materials from other libraries throughout the world.

Students can also borrow course reserves as well as laptops, cameras, cables, and other IT equipment at the Library Services Desk.

The library has a team of librarians and staff that are happy to help students learn how to use the library's resources to find the materials they need. Students are encouraged to contact librarians directly or to ask at the Library Services Desk for help.

The Commons is home to a number of other important services as well, including those offered at the Student Technology Centre, the Writing Centre, and the Math and Science Help Centre.

Students will also find more than 40 desktop computers, a cafe, and quiet and collaborative study spaces throughout the Commons as well as nine group study rooms that can be booked online.

Math Help and Writing and Study Skills Centre

Math and Science Help Centre

The Flora Beckett Math and Science Centre provides additional help to students encountering problems in their mathematics and intro science classes. The Help Centre comprises a team of qualified tutors coordinated by a faculty member from the Department of Mathematics and Statistics. Services provided through the Help Centre are free to all full and part-time UNB students. The Centre is located on the main floor of the beautiful Hans W. Klohn Commons, rooms 133/134.

The Help Centre provides the following services throughout the academic year:

Drop-in Tutoring Sessions

Students may drop into the Help Centre and get one-on-one tutoring from a qualified tutor. Hours of operation are posted on the Help Centre's website. Tutoring is free of charge to all UNB students. No appointments are needed.

Private Appointments

Free Private and Small Group Tutoring is available for students. Email MathHelp@unb.ca for an appointment. All tutoring takes place in Hans W. Klohn Commons, rooms 133/134.

Midterm & Final Exam Reviews

Reviews are done before exams and midterms at the request of course instructors. Emails will be sent regarding time and place of reviews. You can also check out the events on our website for times and locations.

Writing Centre

The writing centre is located on the main floor of the Hans W. Klohn Commons. One-on-one tutoring provides help with any academic writing, including assistance with planning, organization, documentation, grammar, and punctuation's, and academic conventions. To make an appointment, book online at http://unbsj.mywconline.com.

Security and Traffic

Environmental Health, Safety and Security

Campus Security Services are available 24 hours a day - seven days a week, 365 days a year. A 24 hour Security Line is available by calling 648-5675. For pay phones on campus please pick up the receiver and push the Security button, no coin required. The Environmental Health, Safety and Security Department provides the following services; Campus Patrols, Emergency Response, First aid/CPR and AED, Parking/Traffic Control, Investigations, Safe Walks, Key/Card Access Control, Lost and Found, Identification Cards, Emergency Notification Registration, Health and Safety, General Information. Please immediately report emergencies, incidents, or suspicious activity to Campus Security.

Parking

All vehicles on campus are required to have a valid parking permit. Student parking permits can be purchased at Financial Services in Oland Hall. Various options are available (note prices are subject to change without prior notice):

Day pass available from Pay & Display Machine -$5.00

Meter Parking - $1.25 / hour - max time limit one hour

Student Parking Permit Fees - Please refer to Safety & Security Website/Parking http://www.unb.ca/saintjohn/security/parking.html

Further details may be obtained from the Office of Environmental Health, Safety & Security by calling (506) 648-5675, or by visiting their website at http://www.unb.ca/saintjohn/security/index.html.

Emergency Alert Service

The Emergency Alert Service, offered by University of New Brunswick, Saint John campus, allows us to quickly notify you, by text message, email or phone, of a potential emergency on campus such as flooding, fire or similar events which may affect you.

In order to receive notification through this service, you will need to register online at http://www.unb.ca/saintjohn/security/emergency.html

Your information is held in a secure database and is accessed only when an emergency occurs or is expected to occur. When this takes place, an automated message will be sent directly to the contact information you have provided to us.

Only those registered will be contacted by this service when an announcement is made.

Be informed. Register today.

Student Services

Student Services

Student Services offers a number of programs and services design to assist students in their studies and university life. These services include the Writing Centre, Counselling, Financial Aid & Awards Advising, Student Employment Service, Student Accessibility Service, Academic Support, International Student Advisor's Office, Student Health Centre and student orientation activities. The Director of Student Services acts as the campus ombudsperson for students in dealing with academic appeals and disciplinary matters. The staff at Student Services is dedicated to helping students get the most from their university education. For information on programs, services or general inquiries, please visit our website at http://www.unb.ca/saintjohn/studentservices/.

Student Centres

Thomas J. Condon Student Centre

Opened in 1986, the Thomas J. Condon Student Centre houses the offices of student government, the student newspaper (The Baron), Campus Radio Saint John (CFMH, 107.3 FM), lounges, meeting and study rooms, and food services. The Centre consolidates most aspects of student life. Three rooms - the Dr. K.A. Baird Dining Room, the E.A. Whitebone Lounge and the Tanya Hume Room - were named in memory of ardent UNB Saint John supporters. A skywalk connects the Student Centre to the G. Forbes Elliot Athletics Centre.

Funding for the Student Centre was provided by the Third Century Fund (donations from faculty, staff and students) and the provincial government. In 1987, the building was named in honour of Thomas J. Condon, Vice-President of the Saint John Campus from 1977-1987, and 2001-2003.

Students with Disabilities, Services For

Physical Accessibility

The University of New Brunswick is committed to the equitable treatment of students with disabilities. Most buildings on campus have accessible main entrances with ramps and automatic doors. Elevators and wheelchair accessible washrooms are also available.

Academic Accommodations

The Student Accessibility Centre (SAC) is there to assist you in dealing with your individual needs. We will ensure that the any information you provide us remains confidential and private. The Student Accessibility Centre can help with the implementation of a variety of academic supports. If you have any questions or concerns, please do not hesitate to contact us at the SAC sjaccess@unb.ca or (506 648-5690) for more detailed information, or visit our website at http://www.unb.ca/saintjohn/studentservices/accessibility/index.html.

UCard (UNB Photo ID)

The UCard is the University of New Brunswick's official Photo ID Card. Much more than a simple ID, this card provides you with discounts around town, access to library resources, entry to UNB athletic facilities, meal plans, entrance to exams and secure areas, and can even be used as a campus debit card. For more information, visit the UCard Website - http://www.unb.ca/ucard.

To get your UCard: Saint John Campus - Go to the Security Office located in room 119 of the Athletics Centre.

BACHELOR OF APPLIED MANAGEMENT FACULTY OF BUSINESS

General Office:	Philip W. Oland Hall, Room 215
Mailing Address:	Faculty of Business University of New Brunswick 100 Tucker Park Road, Saint John, N.B. Canada, E2L 4L5
Phone:	(506) 648-5570/1-800-50-UNBSJ (86275)
Fax:	(506) 648-5574
Email:	business@unb.ca
Website:	http://unb.ca/saintjohn/business

NOTE: For faculty listing, please see Bachelor of Business Administration program section.

An articulation agreement is a formal, systematic, written collaboration between two institutions designed to identify block transfer credits and to clarify requirements to facilitate student transfers between the two institutions. These agreements are approved by the Maritime Provinces Higher Education Commission and are regularly updated to reflect any changes in curriculum or requirements at the institutions involved. The Faculty of Business at UNBSJ offers articulated programs in Accounting and General Business leading to The Bachelor of Applied Management (BAM). Students first earn a diploma from a participating community college and then enter the third year of the BAM at UNBSJ. The programs are designed to offer students the opportunity to experience two very different types of learning environments while they develop proficiency in both the theoretical and applied areas of their chosen fields.

I. University Regulations on Admission and Academic Regulations

Students are strongly advised to read the General University Regulations, Section B of this Calendar, and in particular the subsection headed "Grading System and Classification". The General University Regulations will govern any point not covered in the regulations that follow. Questions concerning the application of regulations should be directed to the Registrar.

II. BAM Regulations for Students in the Degree Programs

A. Grading and Classification

The regulations in respect to the BAM degree are expressed in terms of letter grades, credit hours and grade point averages. These are explained in Section B of the Calendar. In order to take a BA or HTM course that has a prerequisite, student must earn a C or better in the prerequisite course(s), regardless of the program in which the student is registered.

NOTE: A grade of C or better is necessary in all required and elective courses (including work term reports, where applicable). A grade of D or better is necessary for all options.

B. Credit Hours

The number of credit hours assigned each course is stated in Section F of this Calendar. (In most cases the Faculty of Business assigns a 6 ch weight to a two-term course and a 3 ch weight to a term course). Due to differences in the methods used by the various Faculties in the calculation of credit hours, students who elect to register for courses taught outside of the Faculty of Business should note the following:

1. For purposes of the BAM degree, any course taught outside of the Faculty of Business, which has a course number ending in zero (0) and which is taught over the full academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught, up to a maximum of 6.
2. For purposes of the BAM degree, any course taught outside of the Faculty of Business, which has a course number ending in other than zero (0) and which is offered in one term of the academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught, up to a maximum of 3. Normally courses of less than 3 credit hours will not be considered for credit.
3. Students may take up to 3 one-credit hour courses of an academic nature during their program.

C. Grade Point Average

1. See Section B of this Calendar for detailed regulations on standing and promotion requirements.
2. A student who has been registered in the BAM program and who withdrew while on probation or who was required to withdraw from the program will not be eligible to re-enter the program without the approval of the Faculty of Business.
3. To earn the BAM degree, a student must successfully complete at least 60 ch in approved courses at UNB and must achieve a minimum grade of C in all courses designated as required or elective.

D. Transfer Students

The University regulations in respect to students transferring to the BAM degree program from another UNB degree program and students transferring to UNB from another university or post-secondary institution are stated in the General Regulations of the University.

Course credits may only be transferred from another university when the grade is equivalent to at least a C at UNB.

At least half the credit hours for the BAM degree must be taken at UNB and must normally include all the required courses in the BAM degree program. (Students may be permitted to take some of these courses elsewhere with the prior permission of the Faculty of Business and the Registrar.)

E. Changes in Degree Requirements

Improvements in the BAM program may lead to changes in the requirements for the degree. The University reserves the right to require candidates already enrolled to meet the revised requirements.

F. Normal Course Loads

The normal course load for students in the BAM program will be five courses per term. Students with a cumulative GPA of at least 2.5 may, with the written permission of the Manager of Undergraduate Programs or the Assistant Dean, take a maximum of six courses in a given term.

G. Repeating Courses

A student who fails to obtain a grade of C or better in a required course must retake the course as soon as it becomes available during a session in which the student is in attendance.

A student may take a course a maximum of three times (including Ws but excluding courses which are designated with the "#" notation). Beyond that, the student must obtain the permission of the Dean of the student's Faculty to register again in the repeated course. See University Regulations Section I. E.

H. Course Requirements

Students are responsible for ensuring that they meet all the requirements specified for the degree. These include the minimum credit hour requirements, minimum grade point averages, minimum grades in specified courses, successful completion of all specifically required courses, and compliance with the restrictions on elective and option courses.

Students are advised to consult the Saint John Courses section of this Calendar for detailed course descriptions, including the number of credit hours assigned to each course.

I. Minors and Concentrations

1. Minors in specific business disciplines are not offered. The Faculty of Business will accept all minors as laid out by the offering faculty except as noted below. Students should note that pursuing a minor may require them to complete more than the minimum number of credit hours required for the BAM degree. Compulsory or required courses in a student's degree program normally may not form part of the Minor.
   a. A minor in Economics will be awarded to BAM students who achieve a minimum grade of C in:
      i. ECON 2013 and ECON 2023, and
      ii. Any additional 9 ch in upper level Economics courses. (ECON 2103 and ECON 3114 are recommended for 6 of the 9 ch).
   b. A minor in Mathematics will be awarded to BAM students who achieve a minimum grade of C in:
      i. MATH 1003, MATH 1013, and either MATH 1503 or MATH 2213, and
      ii. An additional 15 ch in Math courses at second year level or above. Maximum 6 ch of approved substitutes may be allowed in consultation with the Department of Mathematical Sciences.
2. BAM students may earn concentrations as outlined in the regulations for the BBA degree under Section E.VIII.J of this calendar. Students should note that pursuing a concentration may require them to complete more than the minimum number of credit hours required for the BAM degree. Compulsory or required courses in a student's degree program normally may not form part of the concentration.

J. BAM with a Certificate in Community Leadership

This program is designed to add value to students' degrees by allowing for participation in the activities required to complete the certificate program. These requirements will include academic course work available as part of the degree program as well as community volunteerism and professional development activities. The certificate program offers students the opportunity to differentiate themselves from other business graduates through professional development, leadership growth, community involvement and networking activities.

The program will consist of four specific academic courses, 40 hours/term for 4 terms of volunteer service in the PALS program, 3 workshops, 1 PALS training course.

Eligibility:

- Open to BBA and BAM students who will be entering their 3rd year of the program.
- Applicants must have a CGPA of 2.7 or higher.
- Applicants must present a combination of academic success, community service and other extra-curricular activities.

Admission:

- Complete and submit an application form.
- Submit a statement outlining your interest in the program and explaining your vision of the role of community leaders.

- Submit a resume detailing community service and extra-curricular activities you have been or currently are involved in.
- Submit an unofficial transcript.

Continued participation in the program after acceptance requires students to maintain a CGPA of 2.7 or higher. Enrolment in the program will be limited to a maximum of 15 students each year.

III. Degree Standing on Graduation
At graduation all successful candidates for the degree of Bachelor of Applied Management shall be listed in alphabetical order within the appropriate degree category as stated below:

Distinction: A student who attains a cumulative grade point average of at least 3.8 over the final 60 ch of course work and no grade less than B- (2.7) over the final 60 ch of course work shall graduate with Distinction.
First Division: A student who attains a cumulative grade point average of at least 3.5 shall graduate in First Division.
Second Division: A student who attains a cumulative grade point average of at least 2.5 but less than 3.5 shall graduate in Second Division.
Third Division: A student who attains a cumulative grade point average of less than 2.5 shall graduate in Third Division.

IV. Bachelor of Applied Management Curriculum Degree Requirements
Elective and option courses for all BAM programs may be chosen from the following:
Humanities and Languages - Classics, English, French, German, Greek, History, Humanities, Latin, Philosophy, Spanish (or other courses as approved by the Faculty of Business)
Social Sciences - Communication Studies, Gender Studies, Geography, International Studies, Linguistics, Politics, Psychology, Social Science, Sociology (or other courses as approved by the Faculty of Business)
Business - All courses prefixed with BA which are not listed as required for specific BAM programs
Other - Biology, Chemistry, Computer Science, Economics, Geology, Hospitality and Tourism Management, Information Technology, Mathematics, Physics, Science, or other courses as approved by the Faculty of Business.
It is the responsibility of students to ascertain that their elective and option courses are acceptable for BAM degree credit. Credit will not be granted for CHEM 1831, CS 1703, ECON 1004, ESL 1301, ESL 1302, ESL 1303, FREN 1103, MATH 1863, MATH 2633, MATH 3633 or PSYC 1273 in the BAM program. Credit will be granted for only one of MATH 1001, MATH 1003, MATH 1823, or MATH 2853.
Students enrolled in a degree or certificate program under the aegis of the Faculty of Business are not to register in the following courses or similar courses without prior permission of the Faculty of Business: PSYC 2102, PSYC 2901, PSYC 3913, STAT 1793, STAT 2263, STAT 2593, or STAT 2793 (The content of these courses is similar to required or optional BBA or BAM courses).
NOTE: Students should contact the Faculty of Business at the beginning of each regular academic year for a revised list of courses in this category.

BACHELOR OF APPLIED MANAGEMENT - ACCOUNTING

Admission Requirements
Students must have successfully completed the two-year Business Technology program with the Accounting Option at NBCC-Saint John, or an equivalent program, with an average of at least 70%. Additional admission requirements will depend upon the institution from which a student graduated.

Curriculum and Degree Requirements
Students must successfully complete at least 60 ch of course work and must obtain the minimum required grades in all required, elective and option courses specifically required for the degree and in the *Prerequisites* for those courses.
Candidates for the degree must successfully complete the following credit hours.
Please **NOTE:** courses designated with (*) are CPA entry courses.

a. 30 ch of required courses
b. 9 ch Accounting Elective chosen from BA 4207, BA 4221, BA 4223, BA 4231*, BA 4237*, BA 4238* or BA 4242*

c. 3 ch Finance Elective chosen from BA 3426*, BA 4437, BA 4455, ECON 3114 or other courses as approved by the Faculty of Business
d. 3 ch Elective courses chosen from COMS 2001, SOCI 2413, ECON 2091, 3 ch Psychology or other courses as approved by the Faculty of Business.
e. 3 ch Business Elective chosen from BA 3123, BA 3134, BA 3557, BA 4101*, BA 4193 or other business course as approved by the Faculty of Business.
f. 12 ch options, with no more than 6 ch from business (Note: BA 2611* is recommended for CPA entry).

Example of a Typical Student's Program BAM Accounting Degree
Third Year
Fall Term MATH 1853, BA 2001, BA 2504, BA 3672*, Electives or Options - 3 ch
Winter Term BA 2606*, BA 3224*, BA 3304, BA 2858, BA 3623
Fourth Year
Fall Term BA 4229*, Electives or Options - 12 ch
Winter Term Electives or Options - 15 ch

BACHELOR OF APPLIED MANAGEMENT - GENERAL BUSINESS

Admission Requirements
Completion of an approved diploma program from a recognized college with a minimum overall average of 70%.

Curriculum and Degree Requirements
Students must successfully complete at least 60 ch of course work and must obtain the minimum required grades in all required, elective and option courses specifically required for the degree and in the *Prerequisites* for those courses.
Candidates for the degree must successfully complete the following credit hours:

a. Successful completion with a grade of "C"

    6 ch Accounting as approved by the Faculty of Business
    6 ch Marketing as approved by the Faculty of Business
    3 ch Management as approved by the Faculty of Business
    3 ch Human Resource Management as approved by the Faculty of Business
    3 ch Finance as approved by the Faculty of Business
    9 ch Operations & Information Mgt as approved by the Faculty of Business
    3 ch Digital Business Design as approved by the Faculty of Business
    3 ch Law as approved by the Faculty of Business
    3 ch Integrated Strategy as approved by the Faculty of Business
    Students who have completed courses in any of these areas at a level judged to be appropriate may be permitted to substitute alternate UNB degree credit courses as approved by the Faculty of Business and following general practice as applied to all degree programs.

b. Successful completion, with a minimum grade of C, of 9 ch of business electives normally chosen from third and fourth level courses.
c. Successful completion, with a minimum grade of C, of 6 ch of economics as approved by the Faculty of Business
d. Successful completion, with a minimum grade of C, of 6 ch of non-business courses acceptable to the Faculty of Business.

Example of a Typical Student's Program BAM General Business
(Assuming no advanced standing for core required business or economics courses in their college diploma or other recognized post-secondary studies)
Third Year
Fall Term BA 1216, BA 1605, BA 2001, BA2504, ECON 1013
Winter Term BA 2217, BA 2303, BA 2606, BA 2858, ECON 1023
Fourth Year
Fall Term BA 2123, BA 3304, BA 3425, BA 3672, Electives or Non-Business Options - 3 ch.
Winter Term BA 3705, BA 4101, Electives or Non-Business Options - 9 ch.

BACHELOR OF ARTS

FACULTY OF ARTS

General Office:	Sir Douglas Hazen Hall, Room 201
Mailing Address:	Faculty of Arts, University of New Brunswick 100 Tucker Park Road, Saint John, N.B. Canada, E2L 4L5
Phone:	(506) 648-5560
Email:	artssj@unb.ca
Website:	http://www.unb.ca/saintjohn/arts/index.html

FACULTY
Dean: Dr. Heidi MacDonald
Department of History and Politics

- Everitt, Joanna, BA (Car), MA, PhD (Tor), Prof & Dean - 1997
- Fury, Cheryl, BA, MA (UNB), PhD (McM), Asst Prof - 2010
- Goud, Thomas, BA (Calg), MA, PhD (Tor), Assoc Prof – 1994
- Jeffrey, Leslie, BA (Acad), MA (Car), PhD (York), Assoc Prof - 1998
- Lewis, Jon-Paul (J.P.), BA (Waterloo), MA (Guelph), PhD (Carleton), Asst Prof - 2010
- Lindsay, Debra, BA (Sask), MA, PhD (Man), Assoc Prof & Chair – 2009
- MacDonald, Heidi, BA Hons (MSVU), MA (St. Mary's), PhD (UNB), Prof and Dean - 2019
- Marquis, Greg, BA (SFX), MA (UNB), PhD (Qu), Assoc Prof - 1999
- Munoz-Martinez, Hepzibah, BA (Universidad de Monterray), MA (York), PhD (York), Asst Prof – 2010
- Toner, Peter M. BA (St. Thomas (NB)), MA (UNB), PhD (NUI), Professor Emeritus

Department of Humanities and Languages

- Belanger, Louis, BA (Montr), MA (UQTR), PhD (Sher), Prof - 1990
- Bell, Sandra, BA, MA (McM), PhD (Qu), Prof - 2010
- Creelman, David, BA (Acad), MA (UNB), PhD (York), Prof & Chair – 2008
- Eldridge, Patrick, BHum, BA (Carleton), MA, MPhil, PhD (KU Leuven), Asst. Prof - 2018
- Hill, Virginia, MA (Bucharest), MA, PhD (Geneva), Prof – 1990
- Jones, Miriam, BA (Tor), MA, PhD (York), Assoc Prof - 1999
- Littlejohn, Murray, BA, MA (Ott), Sr Instructor - 2008
- Loutfi, Fatima, BA (Grenoble), MA (Ottawa), Sr Instructor - 2012
- Maier, Sarah, BA, MA, PhD (Alta.), Assoc Prof - 1998
- Nkunzimana, Obed, Lic(Burundi/Tanzania), MA, PhD (Sher), Prof - 2010
- Serrano, Pedro, BA (El Salvador), MA (ITCA), Sr Teaching Assoc - 2006

Department of Social Science

- Doran, Christopher, J., BA (York), MA, PhD (Calg), Prof - 1989
- Downes, Daniel, BA (Ott), MA (Car), PhD (McG), Assoc Prof - 2001
- Galbo, Joseph, BA (CUNY), MA, PhD (York), Assoc Prof - 1997
- Keyes, Beth, BA, BEd, MEd (UNB), MA (Car), Lecturer - 2008
- Madeley, June, BA (Regina), MA (Dal), PhD (McM), Assoc Prof - 2006
- Moir, Robert, BA (McM), MA (Qu), PhD (McM), Assoc Prof – 1996 & Chair - 2011
- Nelson, Wade, BA (Simon Fraser), MA (Concordia), PhD (McGill) - Asst. Prof - 2019
- Weissman, Eric, BA, MA (Toronto), PhD (Concordia), Asst. Prof - 2019
- Woodhall-Melnik, Julia, BA, PhD (Waterloo), Asst. Prof - 2018

General Information
On the Saint John campus there are a variety of programs leading to the degree of Bachelor of Arts: Majors programs in Biology, French, Communication Studies, International Studies, Linguistics, Mathematics, Philosophy, and Statistics, and with Majors and Honours programs in: Economics, English, History, Politics, Psychology and Sociology.
BA Degree Regulations
Intent
The BA Degree regulations are intended to ensure that the student is exposed to a diversity of academic disciplines in the first half of the degree program, and to give the student a more specialized and concentrated knowledge of one or two academic disciplines in the second half of the program. Students are responsible for ensuring that their course of study meets the BA Degree regulations.
Co-operative Education [Co-Op] Option
The Faculty of Arts offers a 4-years Co-operative Education [Co-Op] option with within the BA program. Consistent with the philosophy of co-operative education, the program is designed to alternate study terms and meaningful work terms. The number of positions is limited, and, therefore,

restricted to students with a B- (2.7) average or higher after their first year of full-time study. Students must apply for the Co-Op program at the end of the second term of their first year of full-time study (completion of at least 8 term-courses). Co-Op students are required to maintain a B- (2.7) GPA or higher throughout their academic terms to remain in the Co-Op program.
Grading System and Classification
The grading system used is that adopted by the University in 1974. The regulations governing grades, grade points, grade point averages and cumulative grade point averages for the BA degree are the same as the General University Regulations, for full-time students, part-time students, and for students enrolled before 1974. For their own benefit all students should study these regulations carefully (see Section B of the Calendar).

1. The BA degree will be granted on successful completion of a minimum of 40 term-courses. A term-course must be between 3 and 5 credit hours to be included in the general BA regulations. Some programs may require courses of lesser values, but these will not count in the general BA requirements (min. 3 ch each term-course). The only exception is for those students who successfully complete the Faculty of Arts Co-Op Option Program who may use ARTS 2903, ARTS 3903, and ARTS 4903 (each 1 ch) to combine for 1 term-course toward their Arts degree. Certain Honours programs may require successful completion of more than 40 term-courses. A full-year course of 6 or more credit hours will count as 2 term-courses. A grade of D or above indicates successful completion of a course, except as stated elsewhere in the Calendar.
2. Normally, the student will successfully complete 20 term-courses at the lower-level (i.e. courses whose number begins with 1 or 2) before taking the 20 term-courses, or more for certain Honours programs, of upper-level courses (i.e. courses whose numbers begin with 3 or 4) which complete the degree program, in accordance with the requirements of either one or two majors programs. Under special circumstances, up to 4 lower level term-courses may be substituted in the total of 20 term-courses of upper-level courses. The written permission of the appropriate chair(s) is required for such a concession.
3. During the session in which students expect to complete successfully the first 10 term-courses, they must choose one or two academic disciplines or fields of study in which they wish to specialize. They must do so by the time they complete the first 20 term courses. If the students choose to specialize in one academic discipline or field of study they are said to be taking a single major; if they choose to specialize in two academic disciplines or fields of study they are said to be taking a double major. Students with a high grade point average may apply to honour rather than major, in one or two disciplines. The honours programs involve more intensive study and are typically taken by students in preparation for postgraduate work. When students have decided on the academic discipline(s) or field(s) of study in which they wish to specialize, they must apply to the appropriate Department(s)/ Discipline(s) for permission to enter the majors program(s) concerned. Students who fail to apply for acceptance to a majors program after they have successfully completed 20 term-courses may find that they will be required to complete successfully more than 40 term-courses in order to fulfill the majors requirements and get a degree. A student must fulfill the requirement for one or more Majors program(s) in order to obtain a BA Degree. Course selections for students in majors programs must be approved by the appropriate Department Chair(s), or their designate.
4. Among the 20 term-courses at the lower-level, a student must successfully complete at least 2 term-courses in three of the four groups listed below. Up to 6 term-courses may be taken in any one discipline, but not more than 4 term-courses may be taken in any other discipline. For students pursuing a double major, this may be amended to allow up to 5 term-courses in each of the disciplines the student is double majoring in subject to Department Chair approval.

   Group 1 - Humanities: Classics, English, History, Humanities, Philosophy, World Literature. Courses in French or Spanish Civilization also form part of this group.
   Group 2 - Languages: French, German, Greek, Latin, Spanish. (**NOTE:** Courses in French or Spanish Civilization do not form part of this group.)
   Group 3 - Social Science: Economics, Gender Studies, Geography, Communication Studies, Linguistics, Politics, Psychology, Sociology.
   Group 4 - Science: Biology, Chemistry, Computer Science, Geology, Information Technology, Mathematics, Physics, Science, Statistics.

5. With the exceptions noted below only credit hours successfully completed in disciplines listed above will count towards the BA degree.

a. Subject to the agreement of the appropriate departments, up to a maximum of 4 term-courses of core Education courses can be counted towards a BA degree.

b. Some core Education courses (ED 3031, ED 3041, ED 3051, ED 3063), as well as ED 3561 and ED 4562 for Arts students who are registered in the Certificate in Teaching English as a Second Language (CTESL) Program, can be counted as Arts elective credits, up to the maximum of 4 term-courses. Methods courses in Education are not eligible for Arts elective credits. Non-core Education courses which are similar to Arts courses, may be considered for Arts elective credit on an individual basis by the Dean of Arts.

c. All courses successfully completed in Humanities (designated HUM), Social Science (designated SOCS), University (designated UNIV), Business Administration (designated BA), and Hospitality and Tourism (HTM) count towards a BA degree, provided that UNB course program regulations are met. HSCI 2001 and NURS 4144 may be approved as general electives towards the BA degree with permission from the Dean.

6. A student may not take more than 6 courses in any term without the written permission of the Dean.

7. For the purposes of the BA degree, a course offered at UNB Saint John shall have the credit-hour rating assigned to it by the Faculty offering the course. **NOTE:** Students taking courses with labs must complete the appropriate lab requirements.

8. Exceptions to these credit hour designations in the BA program may be made only by the Dean of the Faculty and the Registrar.

9. Requirements for the 20 term-courses at the upper-level are listed in the regulations of the appropriate majors programs.

10. Candidates for the degrees of BA (Major) are listed with divisions based on the cumulative grade point averages of all courses taken. See Section B of this Calendar, -Listing of Graduates-.

11. A student who attains a grade point average equal to or greater than 3.75 for courses taken after the completion of their first 20 term-courses and no grades less than C over the last 30 term-courses shall be awarded a Distinction upon graduation.

BIOLOGY MAJOR

In the Biology Major of our BA program, a student will gain a broad experience through core biological science courses. These consist of areas such as zoology and ecology, including a wide range of courses with biological topics from the molecular level to the biosphere; and our courses in the Arts and Social Sciences will meet your needs and interests as you plan your career in Health, Education, Graduate school or Law.

Students who wish to major in Biology will have to plan their course selections carefully to meet the various prerequisite requirements. The following courses are required for all Biology Majors in the BA program:

Core First and Second Year Courses:

1. BIOL 1105
2. BIOL 1017, BIOL 1205
3. CHEM 1041, CHEM 1046
4. CHEM 1072, CHEM 1077

Note: Students who do not have High School chemistry will take CHEM 1831 and either combination of [CHEM 1872 and CHEM 1877] or [CHEM 1041 and CHEM 1046].

5. BIOL 2585
6. BIOL 2615
7. Two courses from the following: BIOL 2015, BIOL 2245, BIOL 2485, BIOL 2125
8. STAT 2263

Core Third and Fourth Year Courses:
Students will complete at least 8 upper level Biology courses. Note: Students must have the appropriate 2000 level Biology course(s) to enrol in upper level courses. The course descriptions list the necessary prerequisites.
For all required courses, students must obtain a grade of "C" or higher. Students must also complete the general BA requirements. For students who are majoring in other disciplines, a Biology minor option is available.

CERTIFICATE IN GENERAL STUDIES

General Information

The Certificate in General Studies is open to all interested individuals, but it is intended for student attending university for the first time. It is anticipated that Certificate students may proceed on to a degree program, transferring all appropriate Certificate credit(s).

Admission

Open to all interested individuals, the Certificate in General Studies has no specific academic *Prerequisites* for students enrolled in a part-time basis, only a desire and willingness on the part of the student to engage in university-level education. Applicants applying to the Certificate in

General Studies for a full-time study should consult with the Faculty of Arts before an admission decision will be made.

There is no minimum age, or any specific prerequisite requirements for entrance into the Certificate in General Studies. Some courses, such as those in Groups D, E, and F, may require successful completion of upper-level high-school studies in the discipline.

General Regulations

1. Students who wishes to pursue the Certificate in General Studies on a full-time basis should first consult with the Faculty of Arts.

2. To earn the Certificate in General Studies a student must complete a minimum of 10 term-courses with a grade of C or better in each course, and achieve a cumulative grade point average of at least 2.0.

3. Students in the Certificate in General Studies are required to take a minimum of 2 term courses from three of the six groups listed below (adhering to all course *Prerequisites*):

Group A Classics, English, History, Humanities, Philosophy, World Literature.
Group B French, German, Latin, Spanish.
Group C Economics, Geography, Health Sciences, Communication Studies, Linguistics, Politics, Psychology, Sociology.
Group D Biology, Chemistry, Geology, Mathematics, Physics, Science, Statistics.
Group E Business, Hospitality & Tourism
Group F Computer Science, Data Analysis, Engineering, Information Technology.

4. A certificate will not be awarded to a student who has completed another degree or certificate program, or is currently enrolled for a degree. Students currently enrolled in another program, or in the No degree program, will be considered for transfer into the Certificate in General Studies program. A maximum of six term courses will be transferable for these students. Students who have withdrawn from an undergraduate degree program may apply for the Certificate in General Studies. Full time Certificate in General Studies enrolment will be considered by the Faculty of Arts and will only be approved in exceptional circumstances. Students wishing to be considered for full-time study MUST supply the Registrar's Office with documentation clearly outlining how and why they are capable of full-time university level study. This documentation will include:

- Official transcripts (high school, GED, college, etc.)
- A resume
- Two (2) or more letter of support from employers/teachers who can clearly attest to how and why the student is capable of full-time academic study
- A personal statement by the student outlining in detail how and why they are capable of university-level full time study.

COMMUNICATION STUDIES

General Information

The University of New Brunswick at Saint John offers a Bachelor of Arts in Communication Studies (COMS), a Double Major in COMS, and a Minor in COMS. The COMS program seeks to provide students with a comprehensive understanding of the social, political, economic and cultural impact of information and communication technologies and practices. As an interdisciplinary Arts program based in the tradition of the social sciences and humanities, the COMS approach combines theoretical, historical, empirical, and practical study, with an emphasis on emerging media of communication, information gathering and distribution. Course offerings are grouped into three primary areas: Media and Culture; Technology and Communication Practices; and Information Gathering, Governance and Policy. These areas of concentration, combined with the interdisciplinary organization of the program, provide students with broad exposure to a variety of perspectives in communication studies.

Major

Students are eligible to declare a COMS Major during the session in which they will complete 10 term-courses towards a Bachelor of Arts degree. To graduate with a Major in COMS, students must complete 14 term-courses (5 lower level/9 upper level) comprised of the following courses:

Lower Level: 5 term-courses
COMS 1001 History of Communication
COMS 1002 Media, Truth and the Social Sphere
COMS 2001 Transformations in Media
SOCI 2251 Film and Society
AND
One term-course selected from the following:
COMS 2101 Popular Music, Culture and Communication
COMS 2103 Understanding Comics and Manga

Upper Level: 9 term-courses
COMS 3001 Contemporary Communication Theory
COMS 3003 Electronic Research
OR an upper level research methods course approved by the COMS co-ordinator

AND
1 term-course selected from the following:
SOCI 4503 Research Seminar in Popular Culture, OR
COMS 4001 Research Seminar in Communications Studies, OR
COMS 4101 Advanced Topics in Communications Studies
AND
2 term-courses at the- 3000/4000 level in COMS from the "COMS-eligible" list
4 term-courses of 3000/4000 electives from the "COMS-eligible" list [See **NOTES** 1 & 2]
No grade lower than a C in a COMS course or a COMS eligible elective will count for credit towards a Major, Double Major or Minor in COMS.
NOTES:
1. The list of current COMS-eligible courses is updated annually and a list of current offerings is posted and circulated to students in the program each spring by the COMS program. Students seeking credit for courses not on this list must have written approval from the COMS Coordinator prior to enrolling in the course.
2. COMS students are responsible for ensuring they have completed appropriate *Prerequisites* for their COMS-eligible electives.

Double Major
Students are eligible to declare a COMS Double Major during the session in which they will complete 10 term-courses towards a Bachelor of Arts degree. To graduate with a Double Major in COMS, students must complete 11 term-courses (4 lower level/7 upper level) comprised of the following courses:
Lower Level: 4 term-courses
COMS1002 Media, Truth and the Social Sphere
COMS 2001 Transformations in Media
SOCI 2251 Film and Society
AND
One term-course selected from the following:
COMS 2101 Popular Music, Culture and Communication
COMS 2103 Understanding Comics and Manga
Upper Level: 7 term-courses
COMS 3001 Contemporary Communication Theory
COMS 3003 Electronic Research
OR an upper level research methods course approved by the COMS co-ordinator
AND
1 term-course selected from the following:
SOCI 4503 Research Seminar in Popular Culture, OR
COMS 4001 Research Seminar in Communications Studies; OR
COMS 4101 Advanced Topics in Communications Studies
AND
4 term-courses of 3000/4000 electives from the "COMS-eligible" list [See **NOTES** 1 & 2]
No grade lower than a C in a COMS course or a COMS eligible elective will count for credit towards a Major, Double Major or Minor in COMS.
NOTES:
1. The list of COMS-eligible courses is updated annually, and a list of current offerings is posted and circulated to students in the program each spring by the COMS program. Students seeking credit for courses not on this list must have written approval from the COMS Coordinator prior to enrolling in the course.
2. COMS students are responsible for ensuring they have completed appropriate *Prerequisites* for their COMS-eligible electives.

NOTE: Upper division courses count for credit in ONE major field only (e.g., SOCI 4503 credit assigned to an COMS Double Major will not be counted for credit towards a Sociology Major or Double Major, or vice-versa)
Minor
Students are eligible to declare a COMS Minor during the session in which they will complete 20 term-courses towards a Bachelor of Arts degree. To graduate with a Minor in COMS, students must complete 8 term-courses (4 lower level/4 upper level) comprised of the following courses:
Lower Level: 4 term-courses
COMS 1002 Media, Truth and the Social Sphere
COMS 2001 Transformations in Media
SOCI 2251 Film and Society
AND
One term-course selected from the following:
COMS 2101 Popular Music, Culture and Communication
COMS 2103 Understanding Comics and Manga
Upper Level: 4 term-courses
COMS 3001 Contemporary Communication Theory
COMS 3003 Electronic Research
OR an upper level research methods course approved by the COMS co-ordinator
AND
2 term-courses of a 3000/4000 elective from the "COMS-eligible" list [See **NOTES** 1 & 2]

No grade lower than a C in a COMS course or a COMS eligible elective will count for credit towards a Major, Double Major or Minor in COMS.
NOTES:
1. The list of current COMS-eligible courses is updated annually, and is posted and circulated to students in the program each spring by the COMS program. Students seeking credit for courses not on this list must have written approval from the COMS Co-ordinator prior to enrolling in the course.
2. COMS students are responsible for ensuring they have completed appropriate *Prerequisites* for their COMS-eligible electives.

Certificate in Social Media
The contemporary workforce requires employees familiar with a variety of critical, analytical and practical communication skills to solve knowledge-related tasks in the workplace. The aim of this certificate is to provide students with a concentrated yet in-depth exposure to the practical communication issues facing workers and citizens in an increasingly digital world.
Admission Regulations

1. Students must have completed an undergraduate degree (or equivalent) in any field in order to apply.

General Regulations

1. A certificate will not be awarded to a student who is currently enrolled in a degree program.
2. A grade of C or higher is required for each course in order to meet the Certificate requirements.

Courses are grouped into theoretical and applied courses covering media representation, communication skills, the use and importance of digital and social media in our everyday work lives and communication analysis.

The certificate consists of ten term courses designed to be completed in one academic year.

(First Semester)
COMS 1002 Media, Truth and the Social Sphere
COMS 2119 Digital Storytelling I
COMS 3001 Contemporary Communication Theory
COMS 4104 Promotional Culture
COMS 5004 Advanced Communication Portfolio I

(Second Semester)
COMS-Eligible Elective - ONE course from the approved COMS-Eligible Electives list
COMS 3103 Mediated Network Publics: Digital Media & Network Technologies in Everyday Life
COMS 4003 Advanced Communication Analysis
COMS 4119 Advanced Communication Presentation Techniques
COMS 5006 Advanced Communication Project Portfolio II

NOTES:

1. The list of COMS-eligible courses is updated annually and a list of current offerings is posted and circulated to students in program each spring by COMS program. Students seeking credit toward the certificate for courses not on this list must have written approval from the COMS Co-ordinator prior to enrolling in this course.
2. Students are responsible for ensuring they have completed appropriate prerequisites for their COMS-eligible electives.
3. COMS students wanting to concentrate in Social Media as part of their COMS degree are ineligible for the certificate.

COMPARATIVE LITERATURE

Minor in Comparative Literature
The minor in Comparative Literature will require WLIT 2501 and WLIT 2502; in addition, students must complete 2 term-courses from group A and 4 term-courses at the upper level from group B for a total of 8 term-courses. A grade of C or better is required in all courses for successful completion of the minor.
Required:
WLIT 2501 The Western Literary Tradition (3 ch)
WLIT 2502 The Non-Western Literary Tradition (3 ch)
Group A: (choose 2 term-courses)
FR 1203   Communicating in French I (3 ch)
FR 1204   Communicating in French II (3 ch)
FR 1304   French for Immersion Students I (3 ch)
FR 2203   Communicating in French III (3 ch)
FR 2204   Communicating in French IV (3 ch)
FR 2304   French for Immersion Students II (3 ch)
GER 1003 Basic German (3 ch)
GER 1004 Improving Basic German (3 ch)
SPAN 1203 Introductory Spanish I (3 ch)

SPAN 1204 Introductory Spanish II (3 ch)
SPAN 2203 Intermediate Spanish I (3 ch)
SPAN 2204 Intermediate Spanish II (3 ch)
Group B: (choose 4 term-courses)
NOTE: students may not take more than 2 term-courses from the discipline of the Majors or Honours program in which they are enrolled. Courses will not be double counted.
WLIT 3314 European Romanticism (3 ch)
WLIT 3315 Nineteenth-Century Literature (3 ch)
WLIT 3725 Literature and/as Philosophy (3 ch)
WLIT 3901 Studies in Comparative Literature (3 ch)
ENGL 3601 Literary Theory (3 ch)
ENGL 3705 Literature of West Indies, Africa and India (3 ch)
ENGL 3812 Postmodern Literature (3 ch)
ENGL 3903 Development of Western Drama (3 ch)
FR 3514   Communication and Literary Form (3 ch)
FR 3524   Contemporary French African and Caribbean Literature (3 ch)
FR 3614   18th C French Authors (3 ch)
FR 3615   19th C French Authors (3 ch)
FR 3616   20th C French Authors (3 ch)
FR 3704   Aspects of World Francophone Culture (3 ch)
FR 3734   Language of Cinema and Literature (3 ch)
FR 4514   Special Topic in French Literature (3 ch)
FR 4524   Literary Criticism in French (3 ch)
PHIL 3075 Philosophies of Art (3 ch)
PHIL 3110 Contemporary Philosophy (6 ch)
SPAN 3007 Fundamentals of Spanish Language and Culture (3 ch)
SPAN 3974 Contemporary Spanish-American Prose Fiction (3 ch)

CRIMINAL JUSTICE MINOR

The Criminal Justice interdisciplinary minor provides an academic opportunity for systematic study in the fields related to criminology, penology and criminal justice.
Eligibility
Admission to the Criminal Justice Minor is open to students who are majoring in either Sociology or Psychology. Students from other disciplines may take the minor, but must meet all program requirements and associated *Prerequisites*. Students must select the Minor in consultation with a Faculty Advisor and this should normally be done at the same time as they declare a Major.
Program of Study
The Minor program in Criminal Justice shall consist of at least eight term-courses of instruction. The four term-courses listed below are mandatory. A minimum grade of C+ is necessary in the mandatory courses to qualify for the Minor. *Prerequisites* are noted in brackets.
Mandatory Courses
PSYC 3263 (3 ch) Psychology of Criminology Behaviour (PSYC 1003, PSYC 1004)
PSYC 4233 (3 ch) Programme Evaluation (PSYC 2102 and, PSYC 2901, Sociology Majors may take SOCI 3104 in lieu of PSYC 2901)
STAT 2611 (3 ch) Anti-Criminology (SOCI 1001)
SOCI 3614 (3 ch) Anti-Criminology II (SOCI 2611, and another two-term courses of lower level SOCI)
Elective Courses
Students must choose the remaining four term-courses from the following courses. *Prerequisites* are noted in brackets, but students should note that some prerequisite courses also have their own *Prerequisites* that are not noted here. A minimum grade of C in these electives is required for them to count towards the Minor.
BA 3557 (3 ch) The Management of Planned Change (BA 2504)
ECON 1004 (3 ch) Economics & Society (no prerequisite)
ECON 1013 (3 ch) Introduction to Microeconomics (no prerequisite)
HIST 4337 (3 ch) Alcohol, Drugs & Tobacco in North America (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
HIST 4371 (3 ch) Murder in Canada: A Social and Legal History (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
HIST 4377 (3 ch) Social History of Crime in Canada (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
HIST 4381 (3 ch) The Family and the State of North America (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
HIST 4383 (3 ch) Police and Society in North America (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
HIST 4386 (3 ch) Canadian Criminal Justice System (completion of 20 term-courses in any discipline, and at least two term-courses in HIST)
PHIL 2003 (3 ch) Introduction to Moral, Social and Political Philosophy (no prerequisite)
PHIL 3124 (3 ch) Contemporary Moral Problems (no prerequisite)
PHIL 3153 (3 ch) Business Ethics (one term course in PHIL or permission of the instructor)
POLS 1201 (3 ch) Canadian Politics (no prerequisite)
POLS 3222 (3 ch) Canadian Political Issues II (POLS 1201)
POLS 3683 (3 ch) Human Rights (POLS 1301 and/or POLS 2601)

POLS 4311 Indigenous Rights and Reconcilliation
POLS 4311 (3 ch) Special Topics in Comparative Politics (see note 3)
POLS 4611 (3 ch) Special Topics in International Politics - Violence and Terrorism
POLS 4655: Drugs, Violence, and Golbal Politics (POLS 1301 or POLS 2601)
PSYC 3265 (3 ch) Forensic Psychology (PSYC 1003, PSYC 1004)
PSYC 4313 (3 ch) Introduction to Psychological Testing (PSYC 1003, PYSC 1004, PSYC 2102)
PSYC 3493 (3 ch) Changing Behaviour (PSYC 1003, PSYC 1004)
PSYC 3553 (3 ch) Psychopathology (PSYC 1003, PSYC 1004)
PSYC 3752 (3 ch) Drugs and Behaviours (PSYC 1003, PSYC 1004)
PSYC 4263 (3 ch) Field Placement in Community Corrections I (PSYC 1003, PSYC 1004, PSYC 3263, PYSC 3493, and SOCI 2611, SOCI 3614; minimum CGPA of B)
PSYC 4264 (3 ch) Field Placement in Community Corrections II (PSYC 1003, PSYC 1004, PSYC 3263, PSYC 3493, PSYC 4263 , and SOCI 2611, SOCI 3614; minimum CGPA of B)
PSYC 4813 (3 ch) Substance Use Disorders (PSYC 2102 and one of PSYC 4833 or PSYC 3752)
SOCI 2603 (3 ch) Sociology of Deviance (Fredericton Campus) (SOCI 1001)
NOTE 1: Mandatory and elective courses taken for the Minor in Criminal Justice cannot be counted towards other program requirements. However, *Prerequisites* taken to be eligible for the mandatory and elective courses may be counted towards other programs.
NOTE 2: Upper level students interested in taking eligible History courses towards the minor, but who do not meet the *Prerequisites*, may consult with the individual course instructor to request permission to register for the course.
NOTE 3: Students who are not majoring or honouring in Political Science will be admitted to a 4000 level POLS course only if they have completed six term-courses in POLS and have consulted with the instructor.

ECONOMICS

Honours, Major and Minor
NOTE: To satisfy the degree requirements of an Honours, Major, double major or Minor in Economics, a grade of C or better, unless otherwise noted, must be earned in all Economics courses, and in all approved substitutes.
Honours
Intent
The BA in Economics Honours is designed to prepare a student to work or study as an Economist. Students interested in pursuing graduate programs in Economics are strongly urged to complete an Honours program in Economics.
Requirements
A minimum of 20 term-courses in Economics are required to obtain an Honours designation. To remain in the program, students must maintain a GPA of 3.0 in ECON (or approved substitute courses). Furthermore, to remain in the Honours program, students must receive no less than a B- in the required term-courses beyond the 1000- level as listed below.
A High Honours degree will be awarded to those students graduating with a GPA of 3.7 (A-) or greater averaged over ECON term-courses (excluding ECON 1013, ECON 1023 and STAT 1793). For an Honours; a GPA of 3.0 is required in these term-courses.
Required Courses

ECON 1013, ECON 2013, ECON 3013, ECON 4045	Microeconomics	4 term-courses
ECON 1023, ECON 2023, ECON 3023, STAT 4035	Macroeconomics	4 term-courses
STAT 1793, STAT 2793 (or equivalent)		2 term-courses
ECON 3665	(Mathematical Economics)	1 term-course
ECON 4645	(Econometrics)	1 term-course
	Total:	12 term-courses

Students in this program are required to pass MATH 1003 and MATH 1013 with a grade of C or better, but these term-courses do not count towards the 20 term-courses in Economics.
Electives
The remaining 8 term-courses in Economics electives will normally be taken in the Economics discipline, but up to 3 discipline-approved term-courses may be substituted for non-compulsory Economics electives (see list of substitute option in Section XI of the Bachelor of Business Administration section of the Academic Calendar). A grade of C or better must be earned in each of these 8 term courses.
Major
Intent
The BA in Economics Major Option is designed to give students a working knowledge of Economics and prepare them to work in business or in a

245

policy-making environment. Students interested in pursuing graduate programs in Economics are strongly urged to complete an Honours program in Economics.

Requirements
A total of 16 term-courses in Economics are required to obtain a Major designation. A grade of C or better must be earned in each of the 16 term-courses required to complete the Majors Program. **NOTE:** Student must obtain at least a B- in ECON 2013 and ECON 2023 in order to stay in the program.

Required Courses
ECON 1013, ECON 2013, ECON 3013 Microeconomics	3 term-courses	
ECON 1023, ECON 2023, ECON 3023 Macroeconomics	3 term-courses	
STAT 1793, STAT 2793 (or equivalent)	2 term-courses	
Total:	8 term-courses	

Students in this program are required to pass MATH 1003 (or MATH 1853 and MATH 2853 as substitute) with a grade of C or better, but this does not count in the 16 term-courses in Economics.

Electives
The remaining 8 term-courses in Economics electives will normally be taken in the Economics discipline, but up to 3 discipline-approved term-courses may be substituted for non-compulsory Economics electives (see list of substitute option in Section XI of the Bachelor of Business Administration section of the Academic Calendar). A grade of C or better must be earned in each of these 8 term-courses.

Double Majors
A total of 14 term-courses in Economics are required to complete a double majors in Economics. Of these, 8 term-courses are the same as those needed to complete the Major (including the Math requirements), with 6 term-courses of Economics electives. Up to 3 discipline-approved term-courses may be substituted for non-compulsory Economics electives (see list of substitute option in Section XI of the Bachelor of Business Administration section of the Academic Calendar). A grade of C or better is mandatory in all 14 term-courses needed to satisfy the double major requirement. **NOTE:** Students must obtain at least a B- in ECON 2013 and ECON 2023 in order to stay in the program.

Minor
Intent
The BA in Economics Minor is designed to give students knowledge of the basic issues in economics so they can make more informed choices in their work and private lives.

Requirements
A total of 8 term-courses in Economics are required to obtain a Minor Designation. A grade of C or better is mandatory in all 8 term-courses needed to satisfy the minor requirement.

Required Courses
ECON 1013, ECON 2013 Microeconomics 2 term-courses; ECON 1023, ECON 2023 Macroeconomics 2 term-courses; plus 4 term-courses

Electives
The remaining 4 term-courses in Economics electives must be taken in the Economics Discipline. Of these 4 term-courses, at least 2 must be at the 3000-level or above. A grade of C or better is required in each of these courses.

EDUCATION

The BEd Degree Program
[A Concurrent Bachelor of Arts/Bachelor of Education degree program for Early Years Education]

General Office:	Sir Douglas Hazen Hall, Room 206
Mailing Address:	Education Program, UNBSJ, PO Box 5050, Saint John, N.B. Canada, E2L 4L5
Phone:	(506) 648-5994
Email:	educsj@unb.ca
Website:	http://www.unbsj.ca/arts/

Statement of Purpose
The Education Program prepares students to assume leadership roles in education. Graduates are ready to begin a professional career and to broaden and deepen their professional expertise through continuing study. Students acquire the knowledge, ethical standards, skills, dispositions, and flexibility needed to address current problems in education both creatively and effectively, and to think critically about professional practice. In all its work, the Program seeks to prepare educators who understand the past, delight in the challenges of the present, and look optimistically to the future.

Degrees in Education
The BA/BEd degree is awarded upon successful completion of 56 term courses, of which 20 term-courses are designated in Education. Students who have completed courses at another University may apply to transfer into a concurrent degree program. A minimum of half of the BA and half of the BEd must be completed at UNB.

General Information

1. Applicants may obtain information or application forms from the Admissions/Registrar's Office, UNB Saint John, PO Box 5050, Saint John, NB E2L 4L5 or by telephoning (506) 648-5670. Applicants are also encouraged to consult UNB's Internet home-page; http://www.unb.ca – for up-to-date developments, including an online application.

2. A student applying for entrance to the University of New Brunswick Saint John (UNBSJ) must complete an application form and forward it to the Admissions/Registrar's Office together with the applicable application processing fee. A non-refundable tuition confirmation deposit will be required from all applications on acceptance.

3. The final date for program application, including provision of required supporting documentation, will be January 31st annually. Applications received after that date may be considered, provided that space is available, but late applicants are cautioned their applications will not be processed until the earlier applications are dealt with, and that they may not necessarily be accepted.

4. Meeting the minimum requirements does not guarantee admission to any program.

5. Students will normally follow the Calendar Regulations for the year of their admission.

All students wishing to follow degree credit programs in Education must obtain permission to enrol from the Admissions Office of the University. Students will normally only be accepted into the Program in September. Please refer to Section B of this calendar for more information on Admission requirements. Those wishing to follow a graduate studies program should write the Dean of the School of Graduate Studies. Students may take some courses for teacher certification credit without being formally admitted to a degree program. However no degree credit will be granted for any course until formal admission to the Program has been granted; courses taken before formal admission will not necessarily be accepted for degree credit. Students may apply to the BA/BEd program with 10-20 BA term-courses completed, but completion of the concurrent program in a shorter time frame as a result is normally not possible.

Graduates of the BEd program are pursuing careers in education in many jurisdictions in Canada, the United States, and in other parts of the world. Students who successfully complete the school years pattern program requirements, including the internship, are eligible to apply for a New Brunswick teacher's license. This license is recognized by other Canadian Provinces and most US states. Nevertheless, students should ensure that the specific programs they are following will qualify them for teacher certification in the province, state or country where they hope to work. **NOTE:** The Province of New Brunswick Teacher Certification Regulations under the Education Act states that only Canadian citizens or those holding landed immigrant status or a work visa are eligible for teacher certification in the Province of New Brunswick.

Concurrent Program
NOTE: Although students may be admitted to the Concurrent (BA/BEd) after completing only 10 term-courses of undergraduate studies, they must fulfill one of the following requirements before the BEd will be awarded.

a. Students must complete at least 10 term-courses of teachable content. These 10 term-courses must include at least one term-course in each of the following: English, Math, Science (Biology, Chemistry, Physics, Earth Science, Environmental Science, Geology, or another approved science course), and Social Studies (Economics, Geography, History, Politics), for a minimum of 4 term-courses. The remaining 6 term-courses may be from any one or a combination of teachable subjects. The mathematics requirement must be a course with a MATH prefix and statistics is not accepted to meet this requirement. However, this requirement may be satisfied by taking MATH 2633.

b. Teachable subjects include: Biology, Business Administration, Chemistry, Classics, Commerce, Communication Studies, Computer Science, Economics, English, French, Geography, History, Languages, Mathematics, Music, Physical Education, Physics, Political Science.

To be admitted to courses in French second language education, students must possess a high level of French competency. Students must provide evidence of this competency through a French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Training and Employment.

The New Brunswick Department of Education requires that all BEd students entering schools (for field studies or individual course requirements), must provide evidence of a Police Background and Vulnerable Sector Check. Students are responsible, at their own expense, to have evidence of the Police Background Check available to present to school officials.

Costs
In addition to those costs listed in Section C of this Calendar, students are responsible for all travel and accommodation costs related to the required student teaching experiences throughout their entire concurrent BEd program.

The Education Program may make arrangements at a limited number of faculty approved locations for students seeking an out-of-province Internship. Students undertaking out-of-province placements will be assessed an out-of-province intern differential fee.

University Regulations

Students are urged to read the General University Regulations, Section B of this Calendar, and in particular the subsection headed Grading System and Classification.

Any point not covered in the following regulations will be governed by the General University Regulations. Students applying for a second undergraduate bachelor's degree, transferring from other institutions, or changing degree programs are particularly advised to consult Section B of this Calendar. Questions concerning the application of regulations should be directed to the Registrar in writing.

General Regulations

Student Standing

a.   Letter grades are assigned in accordance with University regulations.
b.   A grade of B- shall meet the requirements for Bachelor of Education courses unless otherwise stated in the Calendar.
c.   In course offerings of other Faculties/Departments, students must meet the prerequisite requirements of that Faculty/Department.
d.   A grade of C shall be the minimum acceptable grade in courses taken to meet the Teachable requirements for the Bachelor of Education degree.
e.   A BEd degree shall be awarded to a student who successfully completes the approved courses indicated in the program outlined. In addition, students must successfully complete the 15-week Internship.
f.   A CGPA of 2.7 must be maintained to remain in the program and to be eligible to complete the 15-week practicum.

Credit Hours

a.   The normal course load for a concurrent BEd student is 12 term-courses per academic year.
b.   Once admitted to the concurrent degree program a full-time student must strive to maintain an appropriate balance of Education and other-faculty courses, normally no fewer than 5 term-courses total per academic term.

Standing and Promotion Requirements

Per University Regulations (see Section B of the Calendar).

Divisions and Distinctions

a.   BEd degrees are awarded in divisions as stated in the University Regulations.
b.   A student in the BEd program having a minimum cumulative grade point average of 3.8 in Education (ED) courses, and no grade below C, and whose Internship is deemed satisfactory for this degree by the Dean of Arts after consultation with the faculty member(s) who supervised the student's Internship, shall be awarded the BEd degree with Distinction.

Repeating Courses

Per University Regulations (see Section B of the Calendar).

Pre-Internship and Internship (Student Teaching)

The Education Program places students in school settings subject to approval by the University and in cooperation with the public school system.

a.   In order to complete the BEd degree with a recommendation for New Brunswick Teacher Certification, a student must successfully complete Pre-Internship (ED 4003) and the Internship (ED 5040) required in the program: the first one-week placement (ED 4003) will take place at the end of the Winter term in years 1-2 of the program. The Pre-Internship and Internship are evaluated on a pass/fail basis. If an intern is removed from ED 5040 by the Faculty of Arts, a grade of NCR will be assigned. (A grade of 'W', withdrawal, shall not be assigned after this point.)
b.   During their Internship students participate in teaching and learning activities in an educational setting approved by the faculty. Responsibility for arranging and approving student teaching placements and Internship rests within the Education Program Coordinator.
c.   Before entering the 15 week Internship, *Prerequisites* must be met (see course: ED 5040).
d.   With the approval of the Dean of Arts, courses other than the Internship may be taken to meet degree requirements provided the student authorizes the Dean in writing to recommend to the provincial licensing authorities that a New Brunswick Teacher's License not be granted to the student upon completion of the BEd program. Any later request for registration in the Internship must be submitted in writing to the Education Coordinator. In such cases there is no obligation on the part of the Program to place the student in an internship at a later date.
e.   Students are responsible for all travel and living expenses incurred.
f.   Re-registration
   i.   Students who have withdrawn from the Internship must establish that the factors necessitating withdrawal have changed and that there is reason to assume that a further attempt would be successful. The request for re-registration must be submitted in writing and must satisfy the Dean of Arts. Any later requests for

registration in the Field Studies Internship must be submitted in writing to the Dean of Arts. In such cases there is no obligation on the part of the Program to place the student in an internship.
   ii.   Students who have failed the Internship (that is, received a grade of NCR) must establish that the factors causing the failure have changed and that there is reason to assume that a further attempt would be successful. Following failure, students will not be permitted to re-register for the practicum until at least one full academic year has elapsed. The request for re-registration must be submitted in writing and must satisfy the Dean of Arts. In such cases there is no obligation on the part of the Program to place the student in an internship.
g.   Students who apply for the Internship within 3 years of having completed the requirements of the BEd portion of their degree normally will be allowed to register for the Internship without taking any further courses. If more than 3 years has elapsed, the Coordinator may require specific courses (in subject areas and methodology) to be taken prior to registration in the Internship.
h.   Students wishing to be placed in an ESL or French Immersion classroom for their Internship must have completed a minimum of 3 term-courses in second language education.
i.   Any appeal with regard to the final grade or the decision of the Faculty to remove a failing student in the Internship will be considered by the Faculty of Arts and the Education Coordinator. A student may choose a Faculty member to represent her/him on the committee. (See also Section B. VIII, Item H: Review of Grades)

NOTE: Consistent with the New Brunswick Department of Education's "Policy 701 on Pupil Protection," students planning to complete a teaching Internship will be required to provide a background check, (choose options # 3 and # 4 "indices check" on the Consent for Disclosure of Criminal Record Information Form). Students must also provide letters of reference attesting to their suitability to work with pupils in the public school system.

Residency Requirements

Students must complete the Internship at the University of New Brunswick. Of the 20 term-courses required for completion of the degree, a minimum of 8 term-courses must be completed at the University of New Brunswick as students in the BEd degree program.

Time Limit

The maximum time permitted between the first registration and the completion of the Concurrent BEd degree in accordance with the regulations in effect at the time of first registration shall normally be 10 years.

Course Selection

Students should consult with the Education Coordinator to confirm that all courses meet degree requirements. Students in a school years program may not take more than 1 term-course of Education courses outside the school years program i.e. ABRG, FNAT, or Adult Education.

Transfer Credits

Students may obtain advanced credit of up to 7 term-courses toward the BEd for education courses which have been taken at this or another institution, where the grade received is 'B-' or higher, and which meet program requirements.

Admission Procedures

1.   Students apply for entry to the Bachelor of Arts degree program upon completion of their high school program.
2.   Students should apply to the Education Program for admission to the Concurrent Program before January 31 of their first year in the BA program. Upon successful completion of 10 term-courses and meeting other admission criteria (GPA of at least 2.7), they may be admitted to the Concurrent Program.
3.   Admission requires the submission of the following supplemental forms, available from the Education Program Office:
   a.   Personal Statement of Intent;
   b.   Profile/Personal Interest;
   c.   Two letters of reference.

Concurrent BA/BEd

Program Requirements (56 term-courses)

1.   20 term-courses from the Faculty of Education.
2.   40 term-courses approved by the Faculty of Arts of which 4 term-courses of specified Education credits may be used as Arts electives.
3.   A student cannot obtain a BEd degree by itself in this program. A student cannot obtain a BA degree by itself in this program. If a student decides to leave the Concurrent Program, only those Education courses eligible as Arts electives may be transferred to the BA program.

Concurrent BEd courses offered at UNBSJ over a 4-year cycle:

ED 3021, ED 3031, ED 3041, ED 3092, ED 3211, ED 3241, ED 3424, ED 3474, ED 3511, ED 3561, ED 3621, ED 4003, ED 4164, ED 4354, ED 4562, ED 5032, ED 5040, ED 5566.

NOTE: Only the early year's option of the Concurrent BEd is offered to full-time students on the Saint John Campus of UNB. For more details of other options, refer to Section G of this Calendar, Fredericton Academic Programs.

CORE (Required) COURSES -6 term-courses:

ED 3021 Human Development and Learning
ED 3031 Education of Exceptional Learners
ED 3041 Theory & Practice of Education
ED 3092 Frameworks of Education
ED 4164 Techniques of Teaching
ED 5032 Inclusion from the Early Years

METHOD (Required) COURSES- 7 term-courses

ED 3211 Introduction to Visual Education
ED 3241 Music for Classroom Teaching
ED 3424 Teaching Mathematics in the Elementary School
ED 3474 Health & Movement Education in the Elementary School
ED 3511 Introduction to Science Education
ED 3621 Introduction to Social Studies
ED 4354 Literacy Learning in Early Years

Elective Courses - 2 term-courses (ED 2514 and ED 3803 are recommended)

Field Studies- equivalent to 5 term-courses

ED 4003 Field Experience
ED 5040 Internship for Concurrent Education

Certificate in Mathematics for Education

The Certificate in Mathematics for Education is open to all interested students, however it is primarily intended for current and future school teachers for whom mathematics is a potential teachable subject, or ones who simply wish to expand their knowledge in the field of mathematics. This Certificate can be taken as a stand-alone program or in conjunction with a degree program, with the approval of the appropriate faculty. Candidates for admission to the Certificate must meet the University's requirements for admission to any of the faculties, or the requirements for admission as mature students.

The Certificate consists of 30 credit hours (10 courses) as outlined below. A grade of C or better is required in each of the courses.

Mathematics Requirement:

MATH 2633 Fundamental Principles of Elementary School Mathematics
MATH 3633 Fundamental Principles of School Mathematics
MATH 1003 Introduction to Calculus I*
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra** (or equivalent)
MATH 3093 Elementary Number Theory

Statistics Requirement:

STAT 1793 Introduction to Applied Statistics (or equivalent)

Education Requirement:

ED 3424 Teaching Elementary School Mathematics

Additional Requirement:

1. One of MATH 2203 or MATH 3343;
2. Three credit hours in Mathematics, Statistics, or Computer Science, chosen in consultation with the Department of Mathematical Sciences; BA 3623 or ECON 3665 may be accepted as substitutions.

NOTES:

* Students who do not have the *Prerequisites* for this course are required to pass MATH 1863 before enrolling in MATH 1003.

** This course involves the use of MATLAB (a software package for Mathematical simulation).

Certificate in Teaching English as a Second Language (TESL)

Program Description

The program is designed for three groups:

1. English speakers who have completed an undergraduate degree and are seeking employment in TESL.
2. International students who have completed an undergraduate degree, have an acceptable standard of English, and wish to receive TESL certification in an English-speaking environment.
3. Native English speakers who want to obtain a TESL certificate while pursuing an undergraduate degree.

The Certificate in Teaching English as a Second Language (CTESL) Program is a 3 term-course program designed to provide participants with knowledge and skills necessary to become effective teachers of English as a second language (ESL). The CTESL Program requires successful completion of:

A. Three compulsory courses:

ED 3561 - Introduction to Second Language Education (3 ch) - An overview of the theories of learning and teaching in the Second Language context with particular emphasis on a Communicative, multi-dimensional and multi-resource methodology. (ED 4565 can be taken in place of ED 3561 but students cannot count both towards the TESL certificate). Prerequisite: successful completion of 10 term-courses with a GPA of 2.7 or better, advanced written and spoken English language skills.

ED 4562 - Advanced Studies in ESL Education (3 ch) - Examines communicative language teaching in the context of classrooms. Emphasizes varied teaching methods, curriculum development, and evaluation of second language learning. *Prerequisites*: successful completion of 10 term-courses with a GPA of 2.7 or better; as well as ED 3561 or ED 4565. *Co-* or *Prerequisites*: LING 2101 or equivalent (3 ch).

ED 5566 - Field Experience in TESL (3 ch) - Supervised field experience for students in an environment in which they can both observe qualified instructors and participate in planning and teaching English as a second or additional language. (The course does not qualify for the 4 term-courses of ED courses which may be applied to the BA degree.) *Prerequisites*: successful completion of 10 term-courses with a GPA 2.7 or better; as well as ED 3561 or ED 4565. Co-or *Prerequisites*: LING 2101 or equivalent (3 ch).

B. 6 ch of approved Arts and/or Education courses in the area of language education. LING 2101- Linguistics I and LING 3202 - Linguistics II, are highly recommended. English, Humanities and/or foreign language course which emphasize grammar and syntax. Or literacy methodology courses in Education, may also qualify.

Eligibility

Candidates seeking admission to the Certificate in Teaching English as a Second Language must have completed 30 ch hours at a recognized post-secondary institution with a minimum cumulative grade point average of 2.7 (B-). They must be able to demonstrate an advanced level of written and spoken English. The Faculty of Arts reserves the right to test oral and written proficiency in English.

For more information, please contact the Education Coordinator or the Education Secretary in Hazen Hall at (506) 648-5590.

BA Co-operative Education [Co-Op] Option

The Curriculum

The Faculty of Arts offers a Co-operative Education [Co-Op] Option within the BA program. While the program is designed to be completed in four years, students may take longer to complete the program. Students must major in one discipline or double major in two disciplines while participating in the Co-Op option. Consistent with the philosophy of co-operative education, the program is designed to alternate study terms and relevant work terms, as follows:

Co-Op Program Academic/ Work Term Sequence

	Fall	Winter	Summer
	Sept-Dec	Jan-April	May-Aug
Year 1	Academic Term 1	Academic Term 2	Student Apply to Co-Op Program (deadline June 30th annually)
Year 2	Academic Term 3	Work Term 1	Work Term 2
Year 3	Academic Term 4	Academic Term 5	Work Term 3
Year 4	Academic Term 6	Academic Term 7	

Every co-op student shall complete three work terms during their undergraduate degree. The co-op program considers students full-time if they are enrolled in at least 4 term-courses, not including work term reports: ARTS 2903, ARTS 3903, and ARTS 4903.

NOTES:

The sequence of academic terms and work terms outlined is not flexible. Only in unusual circumstances will the Dean or designated Program Director/Coordinator approve deviation from the regular sequence. If students' course selections deviate from the schedule above they are responsible for obtaining academic advising from the Faculty of Arts Student Coordinator or their Faculty Advisor(s) for their major or double majors. Students are responsible for their own academic planning and course selection.

Each work term is normally 12 to 16 weeks in duration.

Admission:

Students apply for the Co-op program at the end of the second term of their first year of full-time study (completion of at least 8 term-courses). Entrance to the Co-op program is a five-step process, as follows:

1. Academic Achievement - Obtain a B- (2.7) cumulative average or higher by the end of the second term of their first year of full-time study to be eligible for the entry-level Professional Development Workshop Series.
2. Program Selection - Students must be chosen from those applying to the BA Co-op program to be admitted into the program. The application deadline will be June 30th of the students' first year. Only a limited number of spaces are available in the program in any given year. Notification of students' acceptance to the program will be given in mid-to-late July.
3. Professional Development - Successfully complete all required elements of the entry-level professional development seminars (PDSs).
4. Mock Job Interview - Participate in and pass a mock job interview.
5. The Job Competition - Obtain a position for Work Term One.

Students who are unsuccessful in any one of the five steps will remain in the traditional BA program. To remain eligible for each Co-op work term, students must attend and complete assignments for all mandatory professional develop seminars in the academic terms offered.

Admissions Policy for International Students Entering the BA Co-op Program

In addition to the above criteria, international students require a TOEFL score of 550 (or equivalent) to enter the BA Co-op program if English is not their first language.

Advancement

To complete the program and earn a Co-op designation, students must:

- Maintain a minimum GPA of 2.7 (B-) throughout the program
- Successfully complete all Professional Development Seminars
- Perform satisfactorily in all work terms
- Obtain a grade of C or higher on each of their work term reports.

If a student's GPA fails below 2.7 but not lower than 2.5 in any one academic semester directly before or after the work terms, she/he will be placed on co-op probation. For additional information, please consult with the Co-Op Coordinator. For additional information, please refer to the co-op students' handbook.

Work Term Reports

The work term report plays a pivotal role in the success of the Cooperative Education [Co-Op] Program. Work term reports ARTS 2903, ARTS 3903 and ARTS 4903 to be allowed to continue in the program. Students who withdraw or are required to withdraw from the co-op program before or after they have completed ARTS 2903, ARTS 3903 and ARTS 4903 may **not** use the credit from ARTS 2903, ARTS 3903 and/or ARTS 4903 toward the 40 term-courses required for their BA degree.

The Co-Op Fee

A comprehensive Cooperative Education [Co-Op] Program includes many important components. Each component provides tangible benefits which are not offered to students in the traditional BA program. Cooperative Education fees are used to develop and support the following areas:

1. Professional Development Seminars
2. Providing feedback to students in order to help them improve performance
3. Employer recruitment
4. Organizing job interviews with employers
5. Mid-Work term performance evaluations
6. Heightening the profile of our co-op program with schools, businesses, and community

Students who do not abide by Co-Op Program regulations set out in the calendar and any Cooperative Education [Co-Op] Program handbook(s), etc., will be required to withdraw from the Co-op Program.

ENGLISH

Honours, Majors and Minor

Special NOTE: Students are not eligible to undertake any upper level courses in English until they have completed three term-courses at the lower level in English, or unless permission is obtained from the instructor. For Majors and Honours students in English, two of the lower level courses must include ENGL 2101 and ENGL 2102.

Honours

Students interested in pursuing an honours degree in English should submit a formal letter of application to the Honours Coordinator for admission to the program.

Students are eligible to apply to the program during the session in which they expect to complete successfully their first 20 term-courses, including four term-courses of lower level English, (two of which must be ENGL 2101 and ENGL 2102.) Students must apply to the program before having completed thirty term-courses. Because of the seminar requirements (see below), only in exceptional circumstances will students be admitted in their fourth year, or after having completed 30 term-courses. To enter the Honours Program, students must have achieved an average of least B+ (3.3) in English courses. Minimum averages of B+ (3.3) in English courses and C+ (2.3) in courses other than English must be maintained if the student is to retain honours standing.

Requirements

Students admitted to the Honours Program are required to complete 20 term-courses in English, including 4 at the lower level, and a minimum of 16 at the upper level. As part of the upper level requirements, students have the option to complete ENGL 4801: Honours Essay Reading and Research and ENGL 4802: Honours Essay.

The Honours Program requires the successful completion of at least two of the upper level courses designated as advanced seminars (ENGL 4803 and ENGL 4804). These courses may count for area coverage; consult the Honours Coordinator.

Students will design their Honours Program in consultation with (any member of the English Discipline, and with the Honours Coordinator), and will be required to complete a minimum of 10 term-courses from the following list, covering at least five of the following six areas. **NOTE:** A minimum of 4 term-courses must be taken in periods prior to 1800:

Areas of Coverage:

a. Medieval (ENGL 3009)
b. Renaissance/17th Century (ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, or ENGL 3109)
c. Restoration and 18th Century (ENGL 3203, ENGL 3204, or ENGL 3205)

d. 19th Century (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, or ENGL 3314)
e. Modern British/American (ENGL 3402, ENGL 3404, ENGL 3405, ENGL 3512, ENGL 3513, ENGL 3514, or ENGL 3515)
f. Canadian (ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, or ENGL 3509)

Literary Theory (ENGL 3601) is strongly recommended for students intending to pursue graduate study. In addition, such students are advised to study a second language.

Electives may be chosen from any of the above areas and from the following list: ENGL 3621, ENGL 3622, ENGL 3631, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3719, ENGL 3721, ENGL 3722, ENGL 3725, ENGL 3801, ENGL 3802, ENGL 3803, ENGL 3922. Up to two approved upper level term-courses (See Honours Coordinator) in literatures other than English may be substituted for up to two English electives.

For first-class honours, a minimum grade point average of 3.6 is required in English courses. For second-class honours, a minimum grade point average of 3.3 is required in these courses. Averages are calculated on the basis of the minimum number of courses required in the programme; courses successfully completed above this minimum are treated as "non-required" courses.

Courses

ENGL 4801: Honours Essay: Reading and Research:
This course is devoted to the research portion of the honours project.

ENGL 4802: Honours Essay:
Upon successful completion of ENGL 4801, an honours essay will be written and presented.

Students wishing to take ENGL 4802 are required to consult with the Honours Coordinator in the winter term prior to the fall enrolment in ENGL 4801. Supervisors will be assigned by the members of the English discipline.

Joint Honours Program - English and History

Students interested in pursuing a joint Honours Program in English and History must apply in writing to either the Honours Coordinator of English or the Coordinator of History.

To satisfy the English requirements for the joint honours degree, students must complete 4 term-courses of lower level English, 2 of which must be ENGL 2101 and ENGL 2102, and a minimum of ten upper level term-courses in English. At the upper level, a minimum of 3 term-courses is required in each of the following two groups, for a total of 6 term-courses:

a. Pre-1800 (ENGL 3009, ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, ENGL 3109, ENGL 3203, ENGL 3204, or ENGL 3205)
b. Post-1800 (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, ENGL 3314, ENGL 3402, ENGL 3404, ENGL 3405, ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, ENGL 3509, ENGL 3512, ENGL 3513, ENGL 3514, or ENGL 3515)

Electives may be chosen from both of the above groups, and from the following list: ENGL 3601, ENGL 3621, ENGL 3622, ENGL 3631, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3719, ENGL 3722, ENGL 3801, ENGL 3802, ENGL 3803, ENGL 3922. Literary Theory (ENGL 3601) is strongly recommended for students intending to pursue graduate study. In addition, such students are advised to study a second language.

Students must complete HENG 4000, (a 2 term-course). Once the student has decided whether the primary emphasis will be on English or History, the supervisors will be assigned from the two disciplines. Credit for the thesis (HENG 4000) will be assigned to the discipline receiving the primary emphasis.

To satisfy the History requirements for the joint honours degree, students must complete 2 lower level term-courses in History and 10 upper level History term-courses, of which 2 term-courses will be an Honours Seminar.

Major

Students are eligible to declare a major once they have completed twenty term-courses. Students will design their program in consultation with the Majors Coordinator.

A single Major in English will consist of at least fourteen term-courses in English, at least 10 term-courses must be at the upper level and a minimum of 4 term-courses of lower level English (including ENGL 2101 and ENGL 2102). A minimum of 3 term-courses are required from each of the following two groups, for a total of 6 term-courses:

a. Pre-1800 (ENGL 3009, ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, ENGL 3109, ENGL 3203, ENGL 3204, or ENGL 3205)
b. Post-1800 (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, ENGL 3314, ENGL 3402, ENGL 3404, ENGL 3405, ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, ENGL 3509, ENGL 3512, ENGL 3513, ENGL 3514, or ENGL 3515)

Electives may be chosen from both of these groups, as well as from the following list: ENGL 3601, ENGL 3602, ENGL 3621, ENGL 3622, ENGL 3631, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3721, ENGL 3722, ENGL 3725, ENGL 3751, ENGL 3801, ENGL 3802, ENGL 3803, ENGL 3808, ENGL 3812, ENGL 3922. Up to two approved upper level term-courses (See Major's Coordinator) in literatures other than English may be substituted for up to two English electives.

An English course will count toward the fulfillment of the Major requirements only when it is passed with a grade of C or above.

A Double Major including English will consist of a minimum of 10 term-courses in English, at least 7 of which must be at the upper level including at least 2 term-courses from each of the two groups listed above. Lower-level courses must include ENGL 2101 and ENGL 2102.

English Major with a Concentration in Drama

Students wishing to concentrate in drama may elect the Single Majors option in English (Drama). This program will consist of at least 14 term-courses in English, of which at least 10 must be upper level courses. Students who elect to take the drama option will organize their programs according to the standard requirements for Majors, with the following modifications: ENGL 2002 must be included among their lower level courses. At the upper level, they will be required to complete ENGL 3801, at least one Shakespeare course, and at least two other upper level courses devoted to the study of dramatic literature (see the Majors Coordinator for a list of acceptable options). As part of their Majors requirements students must complete at least 3 term-courses from each of the 2 Majors groups. These 6 courses can include the required drama courses.

Minor

The Minor in English will consist of a minimum of 8 term-courses in English, at least 3 but no more than 4 of which must be at the lower-level (two of which must be ENGL 2101 and ENGL 2102). A grade of C or better is required in all courses.

FRENCH

Major and Minor
Major

A student who wishes to major in French Communication and Culture will normally have completed four term-courses in French (FR 1203, 1204 and FR 2203, 2204) and have received a grade of C or above. A student who has successfully completed a school French Immersion program may begin a major in French Communication and Culture following completion of FR 1304 and FR 2304 with a grade of C or above.

A Single Major in French Communication and Culture will consist of at least ten term-courses in French at the upper level. A Double Major including French Communication and Culture will consist of at least of eight term-courses in French at the upper level.

A French Communication and Culture course will count towards the fulfillment of the Major requirement only when it is passed with a grade of C or above.

Students will normally apply for admission to the Major Program while completing FR 2204 or FR 2304. Prospective major students should consult a faculty advisor in French when selecting French Communication and Culture courses.

Students may elect to take French courses at other campuses (e.g., in summer school). These credits may be counted for credit in the major program here if prior authorization has been obtained from the Department and the Registrar. This can be done by completing a form available from the Registrar's Office. The student is responsible for providing a detailed description of the course and any other information the Department may require in order to assess it. Only in special cases will students currently enrolled in the program be given retroactive approval for courses taken at other institutions.

In exceptional circumstances, one or more required courses may be replaced by other upper level courses in French.

A Single Major would normally comprise FR 3203, 3204, 4204 and one of 3704, 3714, 3724 and six term courses chosen among upper level courses.

A Double Major including French Communication and Culture would normally comprise FR 3203, 3204, 4204 and one of 3704, 3714, 3724, and four term courses chosen among upper level courses.

There is also a French Major as part of the Business Administration program. See relevant section under Business Administration.

Minor

Students completing a French Minor are required to complete four term-courses in French at the upper-level. FR 3203 and FR 3204 will be required. A minimum grade of C or above is required. The Minor must be declared at the same time as the Major.

There is also a French Minor as part of the Business Administration program. See relevant section under Business Administration.

BBA with a Major/Minor in French Communication and Culture

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to Major in French Communication and Culture must also comply with the following regulations and requirements of the Faculty of Business and the French discipline:

a. Students electing to major in French Communication and Culture should declare the major by the beginning of their third year. All courses taken to comply with the major requirement must be approved by the Department of Humanities and Languages and by the Faculty of Business.

b.

(i.) A BBA student who wishes to major in French Communication and Culture will normally have completed four term-courses in French (FR 1203, FR 1204 and FR 2203, 2204) and have received a grade of B or above. A student who has successfully completed a school French Immersion program may begin a major in French Communication and Culture following completion of FR 1304 and FR 2304 with a grade of B or above. Students receiving a grade between C and B in FR 2304 would normally proceed to FR 2203 and FR 2204. A BBA with a major including French Communication and Culture will consist of at least eight term-courses in French at the upper level.

(ii.) All students must earn a minimum grade of C in FR 3203, FR 3204, and FR 4204; and one of FR 3704, FR 3714, or FR 3724 and four term-courses of approved French Communication and Culture upper level electives.

BBA with a Major in French (Honours) Communication and Culture

In addition to the above requirements for the major, students must obtain a GPA of 3.3 on compulsory and elective term-courses required for the major.

BBA with a Minor in French Communication and Culture

Students completing a French Minor are required to complete at least four term-courses at the upper level in French Communication and Culture, with a maximum of four term-courses at the lower level (FR 1203, 1204 and FR 2203, 2204). FR 3203 and FR 3204 will be required; the remaining two-term courses will be chosen from advanced courses. A minimum grade of C, in lower level courses, and C, in upper level courses, is required. The Minor must be declared at the same time as the Major.

Students who have completed FR 1304 and FR 2304 and are admitted into FR 3203 will also do four term-courses in upper level courses.

Certificate of Proficiency in French
Saint John - Certificate of Proficiency in French Communication and Culture

Persons who would like to have official recognition of their competence in the French language may apply for admission to the above-mentioned program, which is administered for the University by the Department of French on the Fredericton campus and the Department of Humanities and Languages on the Saint John campus. The program consists normally of FR 1203/ FR 1204, FR 2203/ FR 2204, FR 3203 and FR 3204, FR 4204 and one of FR 3704, FR 3714, FR 3724, in all of which the student is to attain a mark of C or higher, and the Certificate is awarded on the basis of a comprehensive examination upon termination of FR 4204.

Full-time students who are not majoring or honouring in French may take these courses as part of their undergraduate program. Persons not working towards a degree may enrol for the courses as part-time students.

Students may apply to enter the Certificate program at any time before their completion of FR 4204. They are encouraged to apply for entry as soon as they register in a course in the programs.

The Certificate of Proficiency in French will be awarded by the University through the Registrar's Office. The student's transcript will bear a separate entry showing that the Certificate has been awarded and recording the grades obtained in the four areas of language competence (speaking, listening comprehension, reading comprehension, and writing). These grades are: A (very good); B (good), and C (satisfactory), and they may be interpreted as follows:

Speaking:

a. Participate with ease in conversation
b. Can participate adequately in conversation albeit with a certain degree of hesitancy
c. Can make themselves understood in conversation

Listening Comprehension:

a. Can understand lectures in a job-related context and radio and TV news and programs which interest them
b. Can understand lectures on non-technical subjects and group conversations
c. Can understand what is said to them in individual conversation with one other person

Reading Conversation:

a. Can understand the main ideas in books, magazines and newspapers without the aid of a dictionary
b. Can read printed material of personal interest with occasional help from a dictionary
c. Can read, with the aid of a dictionary, standard texts written without stylistic difficulties on subjects within their interest

Writing:

a. Can write papers, essays, etc., which are acceptable in form and format

b. Can write résumés, letters, short compositions, which are structurally acceptable but which would need some revision

c. Can write sentences and short paragraphs which are grammatically acceptable

Diplôme de Bilinguisme (Certificate Level Two)

All students who have successfully completed the Certificate of Proficiency in French and students who have completed FR 4204 (or equivalent) with a grade of C or higher (or the equivalent) are eligible for admission.

Eight term-courses must be completed, from any of the 3000/4000 level French term-courses. Approval of courses will be required. The requirements for the diploma are: (a) satisfactory completion of the program with a grade of C or higher in each upper level course, and (b) the passing of a comprehensive final examination.

GENDER STUDIES

Programs in Gender Studies
Minor in Gender Studies
Admission to the Minor is open to students majoring in any Arts discipline and could be available to students in other faculties as minors become available. Students must select the Minor in consultation with the Gender Studies Coordinator, and this should normally be done at the same time as they declare a Major. The Minor requires 24 ch, comprised of Gender Studies 2001 and 21 ch selected from Gender Studies eligible courses. (**NOTE:** The required 24ch does not include the *Prerequisites* required for the Gender Studies eligible courses.) A grade of C or better is required in all courses counting towards the Minor in Gender Studies.

Certificate in Gender Studies
Students meeting the University's entry requirements or the requirements for admission as a mature student may be admitted to the Certificate in Gender Studies programme in consultation with the Gender Studies Coordinator. The Certificate requires 30 ch, comprised of Gender Studies 2001 and 27 ch selected from Gender Studies eligible courses. (**NOTE:** The required 30 ch does not include the *Prerequisites* required for the Gender Studies eligible courses.) A grade of C or better is required in all courses counting towards the Certificate in Gender Studies.

Elective Courses
For the GEND Minor: 21 ch from the following list of Gender Studies eligible courses with at least 6 ch in two of the three groups.
For the Certificate in Gender Studies: 27 ch from the following list of Gender Studies eligible courses with at least 6 ch in two of the three groups.

GEND 4001 is available as a 3 ch elective, and its categorization into the 3 groupings will vary depending upon the specialization of the instructor (please consult with the Gender Studies Coordinator).

NOTE: Unless otherwise indicated, students will be admitted to the following courses when (a) they have met the disciplinary *Prerequisites* for these courses, or (b) they have completed GEND 2001 with a grade of C or better and have obtained permission from the instructor.

GROUP 1:
ENGL3621 Writing by Women I
ENGL3622 Writing by Women II
ENGL3631 Studies in Gender and Genre
HIST3402 Women in American History (disciplinary *Prerequisites* apply)
GROUP 2:
POLS3225 Gender and Politics
POLS3325 Gender and Comparative Politics
POLS3625 Global Gender Issues
POLS4311 Global Politics of Prostitution
SOCI3105 Qualitative Methods in the Social Sciences
SOCI3543 Sociology of Gender Relations
SOCI4263 Discourse and Text (prerequisite: Sociology 3105)
SOCI4555 Gender and Organization
GROUP 3:
HIST3945 Women, Science and Medicine (disciplinary *Prerequisites* apply)
NURS3053 Gendered Experiences in Health Care
PSYC3223 Sex Differences (disciplinary *Prerequisites* apply)
PSYC3263 Psychology of Women (disciplinary *Prerequisites* apply)
SCI3155 Women and Science
SCI3255 Women, Development, and the Environment
SOCI3544 Gender and Technology
FOR STUDENTS ENROLLED IN THE GENDER STUDIES MINOR:
These courses cannot be double counted for those enrolled in Arts. That is, any course taken to fulfil the requirements of the Minor in Gender Studies cannot be counted towards any other programme within Arts.
NOTE: The list of GEND-eligible courses is updated annually, and is available from the Gender Studies Coordinator. Students seeking credit for courses not on this list must have written approval from the Gender Studies Coordinator prior to enrolling in the course. Gender Studies students are responsible for ensuring they have completed the appropriate *Prerequisites* for their GEND-eligible electives.

HISTORY

It is suggested that students wishing to pursue an honours, major, double major or minor in History complete 1 term-course at the 1000-level and 1 term-course at the 2000-level before advancing to the required upper level courses noted below.

Students who have completed satisfactorily Advanced Placement [AP] in European History or International Baccalaureate [IB] courses in History will receive credit for 1 term-course [3 credit hours] of undesignated HIST at the 1000-level and HIST 2101. AP students with US or World History should consult the Faculty of Arts Student Coordinator for transfer details.

<u>General Information – Course Numbering and *Prerequisites*:</u>

1000-level courses: *Prerequisites*: Courses at this level are suitable for students from any discipline who are interested in the study of History.
2000-level courses: *Prerequisites*: Courses at this level are suitable for students from any discipline who have completed:

1. At least ten term-courses -or -
2. At least five term-courses, including one term-course in History.

3000-level courses: *Prerequisites*: Courses at this level are suitable for students from any discipline who have completed at least twenty term-courses. Students should normally have completed at least one term-course in History.
4000-level courses: *Prerequisites*: Courses at this level are suitable for students from any discipline who have completed at least twenty term-courses. Students should normally have completed at least two term-courses in History.
5000-level courses: *Prerequisites*: Courses at this level are restricted to students who have been admitted to the Honours program.

NOTES:

1. Starting in September 2012, many History courses were renumbered. Students should contact the History Advisor and consult the course conversion chart in the appropriate area(s) of the UNB Undergraduate Calendar to avoid taking renumbered courses more than once. Courses having identical or similar content, regardless of numbering, will be counted only once toward the completion of a student's program.
2. Classics courses designated as Ancient History count toward a History major or minor, if a minimum grade of C+ is obtained.
3. Faculty of Arts regulations stipulate that no more than 6 term-courses of 1000 and 2000-level History in any one discipline can be counted toward a BA.

Major

Students are eligible to apply to the major program during the session in which they expect to complete successfully their first 20 term-courses. To enter the History major program, a student must have a minimum GPA of C) in 3 term-courses of lower level History courses (i.e., 1000 and 2000-level courses).

The major consists of a minimum of 14 term-courses of History:

a. A minimum of 1 term-course of 1000-level History
b. A minimum of 2 term-courses of 2000-level History
c. A minimum of 11 term-courses of upper level History

In the major program students must complete 11 term-courses of upper level History courses) with no final grade lower than C in these courses.

Double Major

The double major consists of a minimum of 11 term-courses of History:

a. A minimum of 1 term-course of 1000-level History
b. A minimum of 2 term-courses of 2000-level History
c. A minimum of 8 term-courses of upper level History

All History courses credited toward the double major must have a minimum grade C.

Minor

The minor consists of a minimum of 8 term-courses in History:

a. A minimum of 1 term-course at the 1000-level
b. A minimum of 2 term-courses of 2000-level History
c. At least 5 term-courses at the upper level History

All History courses credited toward the minor must have a minimum grade of C.

Honours

Students interested in pursuing this program must apply in writing to the Honours Coordinator, normally during the term in which they complete the first 30 term-courses of their degree. To be eligible to apply to students must have a minimum grade point average of 3.0 in History courses and a minimum cumulative grade point averageof 3.0. These minimums must be maintained for the duration of the program. No grade lower than C in a History course will count for credit towards the required credits in History for an Honours degrees. Students in the honours program must meet requirements for the History Major and complete an additional 4 term-courses in History, as outlined below.

Requirements

• HIST 5000: Honours Thesis - All thesis topics must be approved by the Honours Coordinator

- HIST 5905: History Theory and Practice
- HIST 5906: Honours Seminar.

For the award of a first-class honours degree, a grade point average of 3.6 is required for all History courses above the introductory level. A second-class honours degree requires an average of 3.3 in higher in these courses. In both cases a minimum of cumulative GPA of 3.3 is required.

Joint Honours Program - English and History

Students interested in pursuing a joint honours program in English and History must apply in writing to either the Coordinator of English or the Coordinator of History.

To satisfy the History requirements for the joint honours degree, students must complete 4 term-courses of lower-level History and 10 term-courses of upper level History courses, of which 2 term-courses will be an Honours seminar.

Students must complete HENG 4000 [equivalent to 2 term-courses]. Once a student has decided whether the primary emphasis will be on English or History, supervisors will be assigned from the two disciplines. Credit for the thesis [HENG 4000] will be assigned to the discipline receiving the primary emphasis.

For detailed information on the English requirements, please consult the Rules and Regulations for ENGLISH [in Saint John Degree Program, UNB Calendar].

INTERNATIONAL DEVELOPMENT STUDIES MINOR

The University of New Brunswick at Saint John offers a double major in International Studies. This interdisciplinary program permits students to combine studies in Language, Culture, Politics, Economics, History, and Literature and offers a comprehensive introduction to global and regional developments.

Program of Study

The Minor consists of 24 ch. A grade of C or better must be attained in all required and elective courses. **NOTE:** None of the courses taken for this Minor may be counted towards the requirements for another Minor or Major.

The following 9 ch of courses are required:
POLS 1601 Introduction to International Politics (6 ch)
ECON 3531 Introduction to International Development
(**NOTE:** ECON 1013 and ECON 1023 are *Prerequisites*.) (3 ch)
A further 15 ch of elective courses selected from the following:
HIST 2000 World History (6 ch)
HIST 3025 Econ Development of Pre-Industrial Europe (3 ch)
HIST 3035 Industrialization of Europe (3 ch)
POLS 3303 Politics of the Developing World (3 ch)
POLS 3622 International Organization and Law (3 ch)
POLS 3631 Survey of Global Issues (3 ch)
ECON 3542 Topics in International Development (3 ch)
ECON 3755 Environmental and Resource Economics (3 ch)
ECON 3702 Cost-Benefit Analysis (3 ch)
BA 4193 International & Comparative Management (3 ch)
BA 4858 International Human Resources Management (3 ch)
SOCI 3523 Sociology of Third World Development (3 ch)

LAW IN SOCIETY
Double Majors Program

Law in Society is an interdepartmental and inter-faculty majors program involving the departments of Anthropology, Economics, History, Philosophy, Politics, Psychology and Sociology in the Arts Faculty, the Law Faculty, and the Faculty of Business Administration, on the Fredericton campus. A number of UNB Saint John courses are eligible for credit for the Law in Society Double Major. Please consult the Fredericton Bachelor of Arts programs section for more information.

LINGUISTICS
Minor

The Minor in Linguistics at UNB Saint John consists of eight term-courses organized in three groups, which are listed below. The requirements are as follows: 2 required term courses from Group 1 a minimum of 2 term-courses from Group 2 a minimum of 2 term-courses from Group 3.

Admission requirements, standards etc.

A mark of C or higher in every course is required for granting of the Minor. *Prerequisites* for courses included in the three groups do not count toward the eight term-courses for the Minor.

List of courses
Group 1 - required (2 term-courses)
LING 2101 Linguistics I
LING 2202 Linguistics II
Group 2 - Linguistics options (minimum 2 term-courses)
LING 1102 English Syntax
LING 3111 Language Acquisition
LING 3113 Phonetics & Phonology
LING 3114 Syntax
LING 3212 The History of the English Language
LING 3223 Semantics

LING 3224 Cognition and Language
Group 3 - related options (minimum of 2 term-courses)
CS 4613 Programming Languages
CS 4913 Theory of Computation
ED 3561 Introduction to Second Language Education
ENGL 3601 Introduction to Literary Theory
FR 1203 Communicating in French I
FR 1204 Communicating in French II
FR 2203 Communicating in French III
FR 2204 Communicating in French
FR 1304 French for Immersion Students I
FR 2304 French for Immersion Students II
GER 1003 Basic German
GER 1004 Improving Basic German
GER 2003 Creative German
GRK 1001 Introductory Ancient Greek I
GRK 1002 Introductory Ancient Greek II
HUM 1021 Effective Writing I
HUM 2021 Effective Writing II
LAT 1001 Introductory Latin I
LAT 1002 Introductory Latin II
LAT 2001 Intermediate Latin I
LAT 2002 Intermediate Latin II
MATH 2003 Discrete Mathematics
PHIL 3063 Introduction to Language and Semantics
PSYC 3693 Cognitive Processes
PYSC 4733 Cognitive Neuroscience
SOCI 4263 Discourse and Text
SPAN 1203 Introductory Spanish I
SPAN 1204 Introductory Spanish II
SPAN 2203 Intermediate Spanish I
SPAN 2204 Intermediate Spanish II

MATHEMATICS

Mathematics Major

1. A student in the BA degree who wishes to major in Mathematics must complete a minimum of 16 term-courses in Mathematics or approved substitutes as follows:

a. MATH 1003, MATH 1013, MATH 1503, MATH 2513, MATH 2523, MATH 2203
b. MATH 3213, MATH 3713, MATH 3733, STAT 3793, STAT 4793
c. At least five upper level mathematics term-courses. At most two (6 ch) of upper level courses from other disciplines with sufficient mathmatical content can be approved for credit by the Chair of the Department as part of these 15 ch. One (3 ch) upper level STAT course may be counted as part of these two term courses (6 ch).

2. In addition, at least one term-course in Computer Science is required.
NOTE:
(i) STAT 1793 and STAT 2793 are recommended prior to taking STAT 3793 and STAT 4793.
(ii) MATH 2633 and 3633 cannot be taken for credit in the Mathematics major except for students registered in concurrent BEd programs. MATH 1853 (Mathematics for Business I) cannot be taken for credit for this program.
(iii) It is recommended that MATH 2203 is taken in the first or second year.

Minor in Mathematics

A student who intends to pursue a Minor in Mathematics is required to take 8 term-courses in Mathematics. Credit must be obtained for MATH 1003, MATH 1013 and either MATH 1503 or MATH 2213. The remaining 5 term-courses of the Minor must consist of Mathematics courses at the second year level, or above. A maximum of 2 term-courses of Statistics courses, at any level, may count towards the 5 term-courses.

PHILOSOPHY

Major and Minor
Major

Students in the BA degree program who wish to take a Major or Double Major in Philosophy should consult with a Faculty advisor in Philosophy on successful completion of 20 term-courses.

A single Major in Philosophy will consist of at least fourteen term-courses in Philosophy, passed with a grade of C or better, including:

a. PHIL 1001 and PHIL 1002;
b. PHIL 1053;
c. Eight term-courses at the advanced level.

A double Major in Philosophy will consist of at least ten term-courses in Philosophy, including PHIL 1001, PHIL 1002, and PHIL 1053, passed with a grade of C or better, of which at least six term-courses must be at the advanced level.

Minor

The Minor in Philosophy will consist of a maximum of four term-courses in Philosophy at the lower level including PHIL 1001, PHIL 1002 and PHIL

1053 and a minimum of four term-courses at the upper level for a total of eight term-courses. A grade of C or better is required in all courses.

POLITICS

Major

Students choosing the discipline major must complete a minimum of 14 term-courses in Politics, as follows:

1. POLS 1201, and POLS 1301;
2. Two of the following: POLS 2201/POLS 2301/POLS 2401/POLS 2601;
3. One of the following: POLS 3401/POLS 3101/POLS 3603/POLS 3425;
4. And POLS 3901 or one 4000 level POLS course.

The remaining 8 term-courses must be upper level courses selected by the student in consultation with the faculty advisor in Politics. No grade lower than a C in a Politics course will count for credit towards a Majors degree in Politics.

Unless otherwise noted:

1. The required prerequisite for entry into any upper level course in Canadian Politics (any course with the number 1, 2 or 5 as its second digit) is POLS 1201;
2. The required *Prerequisites* for entry into any upper level courses in Comparative Politics (any course with the number 3 as its second digit) and International Politics (any course with the number 6 as its second digit) are POLS 1301 and/or POLS 2601.
3. The required *Prerequisites* for entry into any upper level courses in Political Theory (any course with the number 4 as its second digit) is POLS 2401. Exceptions are subject to approval by the Chair of the Department, in consultation with the Politics faculty.

Double Major:

Double major students in Politics and in another discipline must complete 12 term-courses in Politics, as follows:

2. POLS 1201 and POLS 1301;
3. Two of the following: POLS 2201/POLS 2301/POLS 2401/POLS 2601;
4. One of the following: POLS 3401/POLS 3101/POLS 3603/POLS 3425;
5. And POLS 3901 or one 4000 level POLS course.

The remaining 6 term-courses must be upper level courses selected by the student in consultation with the faculty advisor in Politics. No grade lower than a C in a Politics course will count towards a Double Majors in Politics.

Minor

A Minor in Politics requires the completion of 9 credit hours from any of the lower level courses in Politics and 15 credit hours of upper level courses. No grade lower than a C in a Politics course will count towards a Minor in Politics.

PSYCHOLOGY

General Information and Curriculum

Successful completion of PSYC 1003 or an equivalent is necessary before taking PSYC 1004. Both PSYC 1003 and PSYC 1004 must be completed before taking any of the remaining psychology courses. Normally, all Psychology courses counted toward the Psychology Major, BA Psychology Double Major, BA Honours Degree, Minor or Certificate in Mental Health, must have been completed within the 10 years prior to graduation.

Major

To qualify for a Major degree a student must accumulate 14 approved term-courses in Psychology. Six term-courses are compulsory as follows: PSYC 1003, PSYC 1004, PSYC 2102, PSYC 2901 (or equivalent), PSYC 3913 (or equivalent), PSYC 4053, and one of PSYC 4021, PSYC 4111, PSYC 4233, PSYC 4293, PSYC 4313, PSYC 4463, PSYC 4493, PSYC 4583, PSYC4733, PSYC 4813, and PSYC 4833. A minimum grade of C (2.0) is required for all Psychology courses taken to meet the Majors requirement.

Double Major

A student who wishes to do a double major in Psychology and another discipline must complete 12 term-courses including 6 term-courses in upper level electives and all the compulsory courses for the single Major in Psychology. A minimum grade of C (2.0) is required for all psychology courses taken to meet the Double Majors requirement.

Honours

The Honours program in Psychology provides a broad knowledge of this field and its research methods. Students planning to pursue graduate studies in psychology are advised to consider this program. Students may apply to the Honours program during their third year and can enrol in the honours program when they have completed 90 ch (30 term-courses). Applications to the honours program are due in December for admission in the following year. To be eligible to apply they must have a minimum cumulative grade point average of 3.3 (B+), as well as, a cumulative grade point average of 3.6 in all psychology courses at the 2000, 3000, and 4000 level. Please **NOTE** that these minimum requirements do not guarantee acceptance into the Honours program; admittance is competitive and students must obtain a Faculty member willing to supervise them. As well, space may be limited.

Students must complete 18 approved term-courses in Psychology for the Honours degree. Of the 18 term-courses the following 9 term-courses are compulsory: PSYC 1003, PSYC 1004, PSYC 2102, PSYC 2901 (or equivalent), PSYC 3913 (or equivalent), PSYC 4053, PSYC 4142, PSYC 4143, PSYC 4145.

An additional 9 term-courses derived from a selection of 3 term-courses from each of the following 3 groups is necessary.

Group I: Biological/Cognitive Basis of Behaviour I
PSYC 2712, PSYC 2693, PSYC 3343, PSYC 3383, PSYC 3503, PSYC 3513, PSYC 3603, PSYC 3632, PSYC 3712, PSYC 3714, PSYC 3723, PSYC 3743, PSYC 3752, PSYC 4021, PSYC 4201, PSYC 4583, PSYC 4712, PSYC 4733, PSYC 4833

Group II: Social/Personality
PSYC 3035, PSYC 3201, PSYC 3263, PSYC 3265, PSYC 3293, PSYC 3401, PSYC 3412, PSYC 3416, PSYC 3453, PSYC 3461, PSYC 3695, PSYC 4266, PSYC 4267, PSYC 4293, PSYC 4463.

Group III: Clinical/Applied
PSYC 3033, PSYC 3313, PSYC 3323, PSYC 3362, PSYC 3393, PSYC 3493, PSYC 3553, PSYC 3724, PSYC 3725, PSYC 3803, PSYC 4233, PSYC 4263, PSYC 4264, PSYC 4265, PSYC 4313, PSYC 4493, PSYC 4813.

All Psychology courses taken for the Honours degree must be passed with at least a C (2.0). Furthermore, to graduate with an Honours degree in Psychology an overall cumulative grade point average of 3.3 (B+) is necessary, as well as, a cumulative grade point average of 3.3 in all required Psychology courses. For a First Class Honours designation, a grade point average of 3.6 is required in such Psychology courses. For an Honours designation, a grade point average of 3.3 is required in such Psychology courses.

Specializations in Psychology

In addition to the BA in Psychology, students can specialize in three areas of psychology. In addition to the required courses listed above, each specialization includes four courses that are selected as required electives.

BA Psychology with a Specialization in Cognitive Psychology and Neuroscience

Required: PSYC 3723 Introduction to Human Neuropsychology (Prerequisite: PSYC 2712 Foundations in Neuroscience)
Three additional courses chosen from:

- PSYC 2693 Foundation in Cognitive Psychology
- PSYC 3383 Perception
- PSYC 3714 Animal Communication
- PSYC 3724 Introduction to Clinical Neuropsychology
- PSYC 3725 The Dementias
- PSYC 3752 Drugs and Behaviour
- PSYC 4021 Cognitive and Psychophysiological Research
- PSYC 4583 Advanced Perception
- PSYC 4712 Neuroplasticity
- PSYC 4733 Cognitive Neuroscience
- PSYC 4833 Psychopharmacology

BA Psychology with a Specialization in Developmental Psychology

Required: PSYC 3201 Child Development
Three additional courses chosen from:

- PSYC 3293 The Psychology of Aging
- PSYC 3725 The Dementias
- PSYC 4293 Adolescence
- PSYC 4266 Field Placement in Aging I
- PSYC 4267 Field Placement in Aging II
- PSYC 4463 Attachment and Relationships
- PSYC 4493 Developemental Psychopathology

BA Psychology with a Specialization in Psychology and the Law

At least one of PSYC 3263 The Psychology of Criminal Behaviour OR PSYC 3265 Forensic Psychology.

Three additional courses chosen from:

- PSYC 3323 Community Psychology and Mental Health
- PSYC 3493 Changing Behaviour
- PSYC 3553 Psychopathology
- PSYC 3752 Drugs and Behaviour
- PSYC 4813 Substance Use Disorders
- PSYC 4263 Field Placement/Com. Cor I
- PSYC 4264 Field Placement/Com. Cor II
- PSYC 4265 Field Placement in Clinical Psychology

Certificate in Mental Health Studies

This Certificate is intended to provide additional education to professionals working in mental health-related fields (e.g., nursing, outreach/support workers, youth workers, correctional officers, social workers, counselors) who are interested in advancing their knowledge

about mental health topics that relate to their work (e.g., information about mental health disorders and psychosocial issues impacting on personal functioning, lifespan development, and intervention). This Certificate will complement the education of professionals who have non-university and other university-level degree programs that did not offer as in-depth a psychological focus on mental health topics.

The Certificate will require completion of 12 term-courses (36 credit hours). Students will be required to complete three (3) mandatory undergraduate term-courses (PSYC 1003, PSYC 1004, and PSYC 3553) and select a minimum of 9 elective term-courses: Two (2) from each of the four groups and an additional term-course from any of the four groups as outlined in the list of courses below. All courses for the Certificates are degree-credited courses. The duration of the program will be 1-2 years of full-time study, or up to 4 years of part-time study.

Individuals who successfully complete Certificate courses and who are subsequently admitted to a degree program normally will receive credit towards a degree for those courses acceptable for credit in the particular degree program.

To be eligible to register for the Certificate in Mental Health Studies, students must meet the following requirements:

a. There is no minimum age requirement for admission. To be eligible to apply for the Certificate in Mental Health Studies, candidates must have obtained their high school diploma (or its equivalency) and pursued a basic level (i.e., normally 30 credit hours) of approved post-secondary training in a mental health, social service, or health-related field from either an accredited community college or university. Interested applicants should **NOTE** that the Certificate requires students to be prepared for university-level study given that all courses for the Certificate are undergraduate degree-credit courses.

b. Each student entering the Certificate program on a full-time basis must have the prior approval of the Faculty of Arts.

c. A Certificate will not be awarded to a student currently enrolled in psychology degree programs at the University of New Brunswick or at another university, but students who have withdrawn from an undergraduate degree program in psychology may apply for the Certificate.

d. To earn the Certificate a student must successfully complete the number of credit hours in approved courses specified for the Certificate, achieve a grade of at least C in all required courses and achieve a cumulative grade point average of at least 2.0 across all courses used to complete the Certificate.

e. A maximum of 50% of total program requirements may be transferred upon approval from the Faculty of Arts from another degree, Certificate, or similar program whether taken at UNB or elsewhere. However, 50% of the Certificate courses must be taken at the University of New Brunswick. Courses taken more than five years ago will be approved on an individual basis. Relevant courses transferred from elsewhere will be assessed by the Faculty of Arts at the time the candidate applies for the Certificate.

List of all required courses.
PSYC 1003, PSYC 1004, PSYC 3553 (prerequisite PSYC 1003 and PSYC 1004.
List of all elective courses.
Group I:
PSYC 3393 Systems of Therapy *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3493 Changing Behaviour *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3362 Guidance and Counselling *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3313 Introduction to Psychological Testing *Prerequisites*: PSYC 1003 & 1004, PSYC 2102.
PSYC 4265 Field Placement in Clinical Psychology *Prerequisites*: Permission of Instructor and PSYC 1003, PSYC 1004, PSYC 3553, PSYC 3493, as well as PSYC 3362, OR PSYC 3393; Minimum CGPA=3.3 (B+)
PHIL 3133 Health Care Ethics I Prerequisite: One term-course in Philosophy or permission of the instructor
Group II:
PSYC 2201 Child Development *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3293 Aging *Prerequisites*: PSYC 1003 & PSYC 1004, PSYC 2201 OR ED 3021
PSYC 4293 Adolescence *Prerequisites*: PSYC 2201 or PSYC 1273 & PSYC 2102
PSYC 4493 Developmental Psychopathology *Prerequisites*: PSYC 1003 & PSYC 1004, PSYC 2201, PSYC 3553 OR permission of the instructor
Group III:
PSYC 3033 Health Psychology *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3263 The Psychology of Criminal Behaviour *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3725 The Dementias *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 4813 Substance Abuse and Dependence *Prerequisites*: PSYC 1003 & PSYC 1004, PSYC 3752 OR PSYC 4833
Group IV:

PSYC 3711 Biological Psychology *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 3723 Human Neuropsychology *Prerequisites*: PSYC 1003 & PSYC 1004, PSYC 3711
PSYC 3752 Drugs and Behaviour *Prerequisites*: PSYC 1003 & PSYC 1004
PSYC 4833 Psychopharmacology *Prerequisites*: PSYC 1003 & PSYC 1004, PSYC 3711
Minor in Psychology
The Minor in Psychology is an 8 term-course program aimed at students wishing to acquire a basic foundation in Psychology outside of their Major area of study.
Admission to the Minor in Psychology is not open to students who have completed or are currently enrolled in a Major or Honours in Psychology or Bio-Psychology. The minor requires a minimum of 8 term-courses. A minimum of grade of C is required in all courses.
NOTE: PSYC 1003 & PSYC 1004 are *Prerequisites* for all Psychology courses.
Mandatory Psychology courses (4 term-courses)
PSYC 1003 Introductory Psychology
PSYC 1004 Introductory Psychology II
PSYC 2901 Introductory Statistics for Psychologists
PSYC 2102 Research Methods in Psychology (*Prerequisites*: PSYC 2901)
Required Psychology Electives (4 term-courses)
Any four (4) 3000/4000 level Psychology courses.
Minor in Gerentology A Multi-Disciplinary Study of Aging
Gerentology is the study of aging - the physical, cognitive, social, and emotional changes that occur to individuals over the adult years. Gerentology also examines how outside influences impacts the elderly in terms of heath care, pensions, housing facilities, ethics and end-life legislation. This minor will help students understand the needs of an aging community be examining changes from a multidisciplinary perspective. Opportunities will also exsist for experiential learning in field placements in which students will work with seniors in our community.
Eligibility
Open to students pursuing a BA or BSc degree who meet their program requirements and the prerequisites for the 8 term-courses required for the minor. All 8 term-courses must be passed with a C or higher. Courses cannot be counted towards both a minor and a major. **Note:** PSYC 1003 and PSYC 1004 are prerequisites for all PSYC courses at the 2000, 3000, and 4000 level; additional prerequisites are in parentheses.
5 Mandatory Term-Courses:
PSYC 3293 The Psychology of Aging (PSYC 3201)
PSYC 3725 The Dementias
BIOL 1411 Anatomy and Physiology I - without lab (CHEM 122 and BIOL 122 - high school)
PHIL 3133 Health Care Ethics I (one term course in PHIL or permission of the instructor)
HSCI 2001 Introduction to Health
3 Term-Courses from the following list*:
BIOL 1412 Anatomy and Physiology II - without lab (BIOL 1411)
PSYC 2693 Foundations in Perception and Cognition
PSYC 3723 Human Neuropsychology (PSYC 2712)
SOCI 2376 Sociology of Health, Illness and Healing (SOCI 1001 with a C or higher)
PHIL 3134 Health Care Ethics II (PHIL 3133)
PSYC 4266 Field Placement in Aging I (PSYC 3293 and permission of the field placement coordinator; only for completing in the gerontology minor)
PSYC 4267 Field Placement in Aging II (PSYC 3293 and permission of the field placement coordinator; only for students completing the gerentology minor)
*or other approved courses

SOCIOLOGY

General Information and Curriculum
Unless otherwise indicated, students must complete SOCI 1001 before taking any sociology courses at the 2000 level or above. Students are required to complete at least 3 term-courses in Sociology at the lower level (1000-2000 courses) before enrolling in any upper level Sociology courses. Students who are not majoring, minoring, or honouring in Sociology will be admitted to a 4000 level course only if they have completed 6 term-courses of Sociology and have consulted with the instructor. A minimum grade of C (2.0) is required for all sociology courses taken to meet the Majors, Minors, and Honours requirements or *Prerequisites*.
Admission to Major, Double Major, Minor, and Honours Options
Students apply for permission to Major, Double Major, or Minor in Sociology in the term in which they complete 20 term-course of study. In addition to SOCI 1001, students intending to Major, Double Major, Minor, or Honour in Sociology must have completed at least 3 term-courses in Sociology with a grade of C or better prior to admission into the program.
NOTE: Most courses have a prerequisite; students are responsible for ensuring they have completed the appropriate *Prerequisites*.
Major

Students choosing Sociology as a Major must have their program approved by the Department, and must complete a minimum of 14 term-courses in Sociology, including the following required 6 term-courses:

SOCI 1001 Introduction to Sociology
SOCI 3008 Early Social Theory
SOCI 3009 Modern Social Theory
SOCI 3104 Quantitative Methods in the Social Sciences
SOCI 3105 Qualitative Methods in the Social Sciences
1 term-course 4000 Level Sociology Courses

Double Major

A student who wishes to do a double major in Sociology and another discipline must complete 12 term-courses of Sociology, including all compulsory courses for the single major in Sociology.

Honours

Students must apply to the Department for permission to honour in Sociology in the term in which they complete 20 term-courses of studies. Only under exceptional circumstances will students be permitted to enter the Honours program after this time.

To be eligible to apply for the Honours program in Sociology, a student must meet the requirements for admission to the major and have a minimum cumulative grade point average of 3.3. The decision to admit a student to the Honours program rests with the Sociology faculty.

For the award of a High Honours degree, a grade point average of 3.6 is required in Sociology courses above the introductory level and for an Honours degree an average of 3.3 is required. In both cases a minimum cumulative grade point average of 3.3 is required.

Students choosing to Honour in Sociology must have their program approved by the Department, and must complete a minimum of 16 term-courses in Sociology including the following required 10 term-courses and an honours thesis:

SOCI 1001 Introduction to Sociology
SOCI 3008 Early Social Theory
SOCI 3009 Modern Social Theory
SOCI 3104 Quantitative Methods in the Social Sciences
SOCI 3105 Qualitative methods in the Social Sciences

SOCI 4014 Designing Research Proposals
SOCI 4015 Honours Thesis
3 additional term-courses of 4000 level SOCI courses.
An honours thesis is required in the Final Year.

Minor

Students who choose Sociology as a Minor must have their program approved by the Department and must complete 8 term-courses in Sociology. Students will begin with SOCI 1001 as a prerequisite to all other Sociology courses. Students then take a minimum of 2 term-courses in 2nd year Sociology. Of the 5 remaining term-courses of Sociology of the student's choice, 4 must be upper level (3000-4000 courses) for the minor.

STATISTICS

Statistics Major

A student in the BA degree who wishes to major in Statistics must complete a minimum of 16 term-courses in Statistics and Math (as designated below) and 2 term-courses in Computer Science for a total of 18 term-courses.

a. MATH 1003, MATH 1013, MATH 1503, MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793
b. MATH 3713, MATH 3733, STAT 3793, STAT 4793
c. At least four upper level term-courses in Statistics, in addition to STAT 3793 and STAT 4793
d. CS 1003 (or CS 1073) and MATH 3414 (or CS 3113 or equivalent)
   1. At least two term-courses in Computer Science are required.

MATH 1853 (Mathematics for Business I) cannot be taken for credit for this program.

Minor in Statistics

A student who intends to pursue a Minor in Statistics is required to take 24 ch in Statistics. A maximum of 9 ch from Mathematics may be selected. MATH 1853 and MATH 3663 cannot be taken for credit towards the Minor in Statistics. The Minor must be declared at the same time as the Major.

BACHELOR OF BUSINESS ADMINISTRATION
FACULTY OF BUSINESS

General Office:	Philip W. Oland Hall, Room 215
Mailing Address:	Faculty of Business, University of New Brunswick, 100 Tucker Park Road, Saint John, N.B. Canada E2L 4L5
Phone:	(506) 648-5570/1-800-50-UNBSJ (86275)
Fax:	(506) 648-5574
Email:	business@unb.ca
Website:	https://www.unb.ca/saintjohn/business/

Faculty

Dean: Michel Rod, BSc (Hon, Western), MSc (Calgary), PhD (Birmingham, UK), Professor - 2019

Associate Dean, Undergraduate Studies and Student Relations: Greg Fleet, BA, MA, PhD (Western), Associate Professor - 2000

Director, MBA Program: Shelley Rinehart, BA, MA (UNB), PhD (U of Oklahoma), Professor - 1988

- Amin, Gholamreza, BSc (Math), MSc (Oper Res), PhD (Oper Res; Azad University, Iran), Associate Professor - 2016
- Cho, Richard, BSc (Ind Eng) Seoul Natl, MSc (Korean Adv Inst of Science and Tech), PhD (Wat) Associate Professor - 2005
- Civi, Emin, BSc (Econ), MA (Istanbul), PhD (Celal Bayuar), Professor - 2005
- Doiron, Daniel, BScEE (UNB), SMMoT (MIT), Senior Teaching Associate - 2003
- Eslami, Hadi, i BSc (Electrical Engineering, Azad University, Iran), MBA (Marketing, Multimedia University, Malaysia), PhD (Marketing, McMaster University, Canada), Assistant Professor - 2018
- Fleet, Gregory, BA, MA, PhD (Western), Associate Professor – 2000
- Hussain, Md. Mostaque, BCom (Honours), LLB (Pre.), M.Com (Dhaka), MSc, PhD (Vaasa, Finland), Professor - 2006
- Ibn-Boamah, Mustapha, BSc (KNUST), MSc (Nottingham), PhD (Nottingham Trent), Associate Professor - 2010
- Kim, Dongmin, BA, MBA, Yonsei, PhD (Br.Col), Assistant Professor - 2005
- Mendelson, Morris, BA (C'dia), MSc (St Marys (Can)), PhD (Qu), Associate Professor – 2001
- Moir, Robert, BA&Sc (McMaster), MA (Queen's), PhD (McMaster), Associate Professor - 2011
- Oyet, Mercy, BSc (IMSU), MBA (MUN), PhD (MUN), Assistant Professor - 2018
- Rinehart, Shelley, BA, MA (UNB), PhD (U of Oklahoma), Professor – 1988
- Rizvi, Sana, BSc (Hon, Toronto), MSc (San Francisco State), PhD (Waterloo) - Assistant Professor - 2018
- Rod, Michel, BSc (Hon, Western), MSc (Calgary), PhD (Birmingham, UK), Professor - 2019
- Siddiq, Fazley, BA (Hon, U of Dhaka), MA (U of Dhaka), PhD (Dalhousie), Professor - 2013
- Smith, Chris, Bcomm Hons, MBA, PhD in Management (Carleton), Assistant Professor – 2020
- Vaghri, Ziba, BN (IUMS), MSc, PhD (UBC), Associate Professor - 2020
- Watson, Barry, BA, MA, (UNB), PhD (Dalhousie), Associate Professor - 2015
- Wegener, Matthew, BAcc (Brock), PhD (HEC Montreal), Associate Professor - 2015
- Zadeh, Mohammad, BSc (Industrial Engineering), MSc (Financial Engineering), PhD (Accounting, Concordia University, Montreal), Assistant Professor – 2020

General Information

The Faculty of Business offers a four-year program (equally accessible to part-time students) leading to the degree of Bachelor of Business Administration. The objectives of the program are to provide all students with a solid basic understanding of the fundamental human, physical and conceptual relationships that underlie the organization and management of profit and non-profit organizations; to provide individual students with an opportunity to study, in greater depth, those areas of business they find most interesting; to give students the opportunity to obtain the breadth of background in the Arts and Sciences required to appreciate the environment in which organizations must function; and above all, to develop problem-solving abilities and flexibility in students to help them cope with the challenges presented by a rapidly changing society.

I. Co-operative Education Option

The Faculty of Business offers a 4-year Co-operative Education option within the BBA program. Consistent with the philosophy of Co-operative education, the program is designed to alternate study terms and

meaningful work terms. The number of positions is limited and, therefore, restricted to students with a B- average or higher after their first year. Students may apply for the Co-op program during their second semester. Co-op students are also required to maintain a B- GPA or higher throughout their academic terms.

II. Opportunities for Graduates

The program has been designed to prepare its graduates, by means of a well-rounded theoretical and practical education, to enter the administrative levels of private and public corporations, institutions, and agencies. It also prepares students interested in a career in accountancy to undertake on-the-job training leading to professional certification. Holders of the BBA degree may be exempt from part of the required term of service, part of the course of study, and some of the examinations prescribed by the organizations awarding the professional designation "Chartered Professional Accountant (CPA)". Students interested in the accounting profession should discuss their interest with their faculty advisor or consult the CPA Accounting Associations directly.

III. Business Administration and Law

BBA students who have completed three years of the BBA program may be admitted to the UNB Faculty of Law and may qualify for the BBA degree by successfully completing the first year of the Law program. To qualify for the BBA, such students must have credit for all of the REQUIRED courses specified for the BBA degree (except BA 4101) and must have a session grade point average of at least 2. 0. Students must apply to and be accepted by the Faculty of Law. The current regulations of that Faculty require a minimum grade point average of 2.7 (on a 4. scale) before a student without a degree will be considered for admission. The average admission GPA for students accepted in 2008 was 3.8. The final grade-point average for BBA degree purposes will be determined by including the results in the first year of the Law program as part of the "final" credit hours used.

IV. Certificate Programs in Administration

The University of New Brunswick, Saint John Campus offers nine certificate programs in Administration. This includes a certificate program in Business Administration Level I and Level II, Accounting, Community Leadership, Digital Business Design, Human Resource Management, Economics, Financial Markets, and one in Nursing Leadership and Management.

These certificate programs are designed to provide individuals, especially working adults, with an opportunity to engage in systematic and co-ordinated study directed towards an academic goal. Participants enrolled in the certificate programs will have an opportunity to study the basic principles of administration and management; to improve their analytical skills; to increase their awareness of the various factors contributing to effective decision-making and to understand the basic functions of organizations.

The certificate programs will be of particular interest to individuals who are engaged in administration, contemplating a career in administration or management and wish to expand their knowledge in the related subject areas.

The courses in the certificate programs are presented at the undergraduate level of study and provide a framework for theoretical analysis of general principles of administration through lectures, discussions and individual study. By combining accumulated work experience and formal classroom learning, participants will be able to relate theory and practice as part of their continuing development.

All courses for the certificates are degree-credit courses. Individuals who successfully complete certificate courses and subsequently are admitted to a degree program will receive credit towards a degree. Credit will be granted for those courses accepted by the particular degree program. Individuals admitted to a BBA degree program will normally be able to apply certificate courses completed successfully to their degree program. For further information on these Certificate Programs please see the section entitled Certificate Programs in Business Administration, in the Saint John Programs Section of this Calendar.

V. Graduate Studies in Business

The Faculty of Business offers graduate studies in Business leading to the Master of Business Administration (MBA) on a full-time or part-time basis. Students may concentrate in international business or electronic commerce at the graduate level. Applicants who have previously received an undergraduate degree and who want to study business should contact the Faculty of Business at (506) 648-5746 to receive information on the entrance requirements of the MBA. The full-time program is a very intensive 12-month, co-op MBA. Part-time students may choose their courses from evening and Saturday offerings.

VI. University Regulations on Admission and Academic Regulations

Students are strongly advised to read the General University Regulations, Section B of this Calendar, and in particular the subsection headed "Grading and Classification". The General University Regulations will govern any point not covered in the regulations that follow. Questions concerning the application of regulations should be directed to the Registrar.

VII. Transfers and Graduates of a Community College or Equivalent System to the BBA degree

The University of New Brunswick has specific articulated agreements with a number of domestic and international colleges. Such agreements provide for 2-year block transfer into our Applied Degree programs. See Saint John degree programs/Bachelor of Applied Management for additional information. Also, please consult Admissions at the Registrar's office for an updated listing of such arrangements.

Generally, up to a maximum of 60 ch toward the BBA degree may be granted. College transfer students will be required to successfully complete, including any transfer credits, a total of 120 ch in order to graduate with a BBA degree. Only courses with a minimum grade of 65% will be considered for transfer. Entering students will be advised of their status as it is provided in the Admission Regulations of the University, Section S - Transfer students.

VIII. BBA Regulations for Full-time and Part-time Students in the Degree Program

A. Grading and Classification

The regulations in respect to the BBA degree and the Certificates are expressed in terms of letter grades, credit hours and grade point averages. These are explained in Section B of the Calendar. In order to take a Business Administration (BA) course that has a prerequisite, student must earn a C or better in the prerequisite course(s), regardless of the program in which the student is registered.

B. Credit Hours

The number of credit hours assigned each course is stated in Section F of this Calendar. (In most cases the Faculty of Business assigns a 6 ch weight to a two-term course and a 3 ch weight to a one-term course.)

Due to differences in the methods used by the various Faculties in the calculation of credit hours, students who elect to register for courses taught outside of the Faculty of Business should **NOTE** the following:

1. For purposes of the BBA degree, any course taught outside of the Faculty of Business, which has a course number ending in zero and which is taught over the full academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught, up to a maximum of 6.

2. For purposes of the BBA degree, any course taught outside of the Faculty of Business, which has a course number ending in other than zero and which is offered in one term of the academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught, up to a maximum of 3. Normally courses of less than 3 credit hours will not be considered for credit.

C. Grade Point Average

1. See Section B of this Calendar for detailed regulations on standing and promotion requirements.

2. A student who has been registered in the BBA program and who withdrew while on probation or who was required to withdraw from the program will not be eligible to re-enter the program without the approval of the Faculty of Business.

3. To earn the BBA degree, a student must successfully complete at least 120 ch in approved courses and must achieve a minimum grade of C in all courses designated as required or elective.

D. Transfer Students

The University regulations in respect to students transferring to the BBA degree program from another UNB degree program and students transferring to UNB from another university or post-secondary institution are as stated in the General Regulations of the University.

Course credits may only be transferred from another university when the grade is equivalent to at least a C at UNB.

At least half the credit hours for the BBA degree must be taken at UNB and must normally include all the required courses in the BBA degree program. (Students may be permitted to take some of these courses elsewhere with the prior permission of the Faculty of Business and the Registrar.)

E. The BBA as a Second Degree

Graduates of UNB are required to successfully complete a minimum of 30 additional credit hours at UNB; graduates of other recognized universities must successfully complete a minimum of 60 ch at UNB. All graduates must have credit for all the required, elective and option courses (or their equivalent) in the BBA program, and must comply with the regulations in Section C above.

F. Changes in Degree Requirements

Improvements in the BBA program may lead to changes in the requirements for the degree. The University reserves the right to require candidates already enrolled to meet the revised requirements.

G. Normal Course Load

The normal course load for students in the BBA program will be five courses per term. Students with a cumulative GPA of at least 2.7 may, with the written permission of the Manager of Undergraduate Programs or the Dean of the Faculty of Business, take a maximum of six courses in a given term. The normal course load for students accepted into the co-op program is six courses per term.

H. Repeating Courses

A student who fails to obtain a grade of C or better in a required course must retake the course as soon as it becomes available during a session in which the student is in attendance.

A student may take a course a maximum of three times (including Ws but excluding courses which are designated with the "#" notation). Beyond that, the student must obtain the permission of the Dean of the student's Faculty to register again in the repeated course. See University Regulations section VIII.I.

I. Majors, Minors and Concentrations

1. See Section XI regarding the BBA with a major in Economics.
2. See Section XII regarding the BBA with a minor in Economics.
3. See Section XIII regarding the BBA with a major in French Communication and Culture.
4. See Section XIV regarding the BBA with a major in French (Honours) Communication and Culture.
5. See Section XV regarding the BBA with a minor in French Communication and Culture.
6. See Section XVI regarding the BBA with a major in Human Resource Management.
7. See Section XVII regarding the BBA with a major in Accounting.
8. See Section XVIII regarding the BBA with a major in Digital Business Design.
9. See Section XIX regarding the BBA with a major in Marketing.
10. See Section XX regarding the BBA with a minor in Mathematics.
11. See Section XXI regarding the minor in Business for non-business students.
12. Students in the BBA program may choose to complete a double major in any two of the following disciplines: Human Resource Management, Accounting, Digital Business Design, Marketing, Economics and French Communications and Culture. Students pursing a major(s), concentration(s) and/or minor(s), must meet all of the individual requirements for each. Students pursuing any *combination* of major(s), concentration(s) and minor(s) may not double count any course that is common to that combination; instead, the common course must be used for one and substituted in the other with a course approved by the Faculty of Business. For example, BA 3426 is an elective for the Accounting Major and Finance Concentration. If a student pursuing a major in Accounting and a concentration in Finance counts BA 3426 toward the Accounting major, they cannot also count this course toward the Finance Concentration. The student must complete an additional course from the list of electives for the Finance concentration (or another course as approved by the Faculty of Business) to replace BA 3426 for the Finance concentration.
13. A student qualifying for the BBA degree who has met the requirements for a single or a double major in the Bachelor of Arts program may request the Registrar to **NOTE** on the student's transcript that the major requirement in the external discipline has been met.
14. Students should **NOTE** that not all elective or optional courses are offered each year. The Course Catalogue should be consulted for current offerings.
15. The Faculty of Business will accept all minors as laid out by the offering faculty except as noted below in Sections XII BBA with a Minor in Economics, XV BBA with a Minor in French Communication and Culture, XX BBA with a Minor in Mathematics and XXI Minor in Business for Non-Business students.
16. **Concentrations** are offered in Accounting, Digital Business Design, Finance, Human Resource Management, and Marketing. Concentrations are completed by achieving a cumulative GPA of at least 3.0 for 12 ch of approved electives in the area of interest. Approved courses for each subject of concentration are as follows:

Accounting

1. BA 3235 Intermediate Accounting I*
2. BA 3236 Intermediate Accounting II*
3. BA 3224 Accounting for Manager III*
4. And one of:

    a. BA 4207 Current Accounting Issues
    b. BA 4221 Advanced Management Accounting
    c. BA 4223 Accounting Information Systems
    d. BA 4229 Advanced Financial Accounting I*
    e. BA 4231 Advanced Financial Accounting II*
    f. BA 4237 Income Taxation*
    g. BA 4238 Auditing*
    h. BA 4242 Accounting Theory
    i. BA 4203 - Independent Study - Accounting

j. Or other course(s) as approved by the Faculty of Business

Digital Business Design

1. BA 2123 Introduction to Digital Business
2. BA 2663 Technology Trends in Digital Business
3. And at least two of the following:

   a. BA 2611 Business Data Visualization
   b. BA 3131 Creative Problem Solving
   c. BA 3133 Business Model Validation
   d. BA 3135 Design Thinking
   e. BA 3136 Customer-Focused Innovation
   f. BA 3305 Marketing on the Internet
   g. BA 3718 Legal, Privacy & Security Issues on the Internet
   h. BA 4108 Management of New Enterprise
   i. BA 4223 Accounting Information Systems
   j. BA 4866 Management of Technology
   k. Or other course(s) as approved by the Faculty of Business

Finance

1. 6 ch of approved Finance Electives
2. 6 ch of approved Finance or Non-Finance Electives

Available Finance electives are:
   a. BA 3421 Personal Financial Planning
   b. BA 3426 Corporate Finance*
   c. BA 4437 Investment Analysis and Portfolio Management
   d. BA 4455 Derivatives: Options and Futures
Approved non-Finance electives are:
   a. ECON 2103 Financial Institutions and Markets
   b. ECON 3114 International Financial Institutions and Markets
   c. ECON 3412 International Macroeconomics and Finance
   d. or other course(s) as approved by the Faculty of Business

Human Resources Management

At least four of the following electives:
   a. BA 2758 Employment Law
   b. BA 3129 Business Research Methods
   c. BA 3813 Introduction to Industrial Relations
   d. BA 4813 Negotiations and Dispute Resolutions
   e. BA 4853 Recruitment and Selection
   f. BA 4854 Training and Development
   g. BA 4855 Compensation Structure Development
   h. BA 4856 Evaluating and Rewarding Employee Performance
   i. BA 4857 Management of Occupational Health and Employee Wellness
   j. BA 4866 Management of Technology
   k. Or other course(s) as approved by the Faculty of Business

Marketing

1. BA 3129 Business Research Methods
2. BA 3328 Consumer Behaviour
3. And two of:

   a. BA 4107 Studies in Small Business
   b. BA 3305 Marketing on the Internet
   c. BA 3339 Marketing Communications
   d. BA 3371 Marketing of Services
   e. BA 4334 Public and Non-profit Marketing
   f. BA 4398 International Marketing
   g. Or other course(s) as approved by the Faculty of Business

IX. Degree Standing on Graduation

At graduation all successful candidates for the degree of Bachelor of Business Administration shall be listed in alphabetical order within the appropriate degree category as stated below:

a. Distinction
A student who attains a cumulative grade point average of at least 3.8 over the final 60 ch of course work and no grade less than B- (2.7) over the final 60 ch of course work shall graduate with Distinction.

b. First Division
A student who attains a cumulative grade point average of at least 3.5 shall graduate in First Division.

c. Second Division
A student who attains a cumulative grade point average of at least 2.5 but less than 3.5 shall graduate in Second Division.

d. Third Division
A student who attains a cumulative grade point average of less than 2.5 shall graduate in Third Division.

X. Business Administration Curriculum and Degree Requirements

1. Students must successfully complete at least 120 ch of course work and must obtain a grade of at least C in all required and elective courses specifically required for the degree.
2. The normal course load for students in the BBA program will be five courses per term. Students with a cumulative GPA of at least 2.7 may, with the written permission of the Manager of Undergraduate Programs or the Dean of the Faculty of Business, take a maximum of six courses in a given term.
3. Candidates for the degree must successfully complete the following credit hours: a) 57 core, b) 18 Business electives, c) 6 Social

Science electives, d) 6 Humanities and Languages electives, e) 33 options, of which a maximum of 18 may be chosen from Business and a maximum of 12 of the 33 may be at the introductory level.

An elective course is one chosen from a specified group of courses, e.g. "from Social Science or Business". An option course is an approved course chosen by the student from any approved discipline.

Electives:
4. Humanities and Languages: Classics, English, French, German, Greek, History, Humanities, Latin, Philosophy, Spanish, (or other courses as approved by the Faculty of Business)
   Social Sciences: Communication Studies, Gender Studies, Geography, International Studies, Linguistics, Politics, Psychology, Social Science, Sociology (or other courses as approved by the Faculty of Business)
   Business: All courses prefixed with BA which are not listed as required in section 5 below.
   Options: Except as noted below, options may be chosen from any of the elective areas listed above as well as: Biology, Chemistry, Computer Science, Economics, Geology, Hospitality & Tourism Management, Information Technology, Mathematics, Physics, Science, or other courses as approved by the Faculty of Business.
5. It is the responsibility of students to ascertain that their elective and option courses are acceptable for BBA degree credit. Credit will not be granted for CHEM 1831, ESL 1301, ESL 1302, ESL 1303, FREN 1103, IT 1703, ECON 1004, PSYC 1273 or MATH 1863, MATH 2633 OR MATH 3633 in the BBA program. Credit will be granted for only one of MATH 1001, or MATH 1003, or MATH 2853.
   Students enrolled in a degree or certificate program under the aegis of the Faculty of Business are not to register in the following courses or similar courses without prior permission of the Faculty of Business. (The content of these courses is similar to required or option BBA courses.)
   PSYC 2901, PSYC 3913, STAT 1793, STAT 2793, STAT 2263, STAT 2593.
   NOTE: Students should contact the Faculty of Business at the beginning of each regular academic year for a revised list of courses in this category.

6. ## Course Requirements

   Students are responsible for ensuring that they meet all the requirements specified for the degree. These include the minimum credit hour requirements, minimum grade point averages, minimum grades in specified courses, successful completion of all specifically required courses and compliance with the restrictions on elective and option courses as in regulation X.3 above.
   Students are advised to consult Section F of this Calendar for detailed course descriptions, including the number of credit hours assigned to each course.

Example of a Typical Student's Program
(15 ch per term, total 120 ch)

First Year
Fall Term
MATH 1853 Math for Business I
ECON 1013 Intro to Economics-Micro
BA 1501 How Business Works
Humanities or Language Elective*
Social Science Elective*
Winter Term
BA 1605 Business Decision Analysis I
ECON 1023 Intro to Economics-Macro
BA 1216 Accounting for Managers I
Social Science Elective
Humanities or Language Elective

Second Year
Fall Term
BA 2217 Accounting for Managers II
BA 2504 Introduction to Organizational Behaviour
BA 2606 Business Decision Analysis II
Business Elective/Option** - 6 ch
Winter Term
BA 2001 Business Communications
BA 2303 Principles of Marketing
BA 2858 Introduction to Human Resource Management
BA 3623 Management Science: Deterministic Models
Business Electives or Option** - 3 ch

THIRD YEAR
Fall Term
BA 3425 Managerial Finance
Business electives or option courses - 12 ch
Winter Term
BA 3304 Marketing Management
BA 3653 Production & Operations Management
BA 3672 Introduction to Management Information Systems
BA 3705 Business Law

Business Electives or Option Courses - 3 ch
Fourth Year
Fall Term
BA 4101 Competitive Strategy
Business Electives or Option Courses - 12 ch
Winter Term
Business Electives or Option Courses - 15 ch
NOTES:
* All students must include BA 1501 within their first 30 ch; 6 ch from the Social Science disciplines within their first 60 ch, and 6 ch from the Humanities and Languages disciplines within their first 60 ch.

** Option courses may be selected from the offerings of any faculty provided that the selections are in accord with regulations X.3 and 4 above, and provided they are approved by the Faculty of Business.

XI. BBA with a Major in Economics

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to major in Economics must also comply with the following regulations and requirements of the Faculty of Business and the Economics discipline:
a. Students electing to major in Economics should declare the major by the beginning of their third year. The Faculty of Business must approve all courses taken to comply with the major requirement.
b. In order to earn the major in Economics, BBA students must complete the following:
i. earn a minimum grade of C in the following compulsory courses: ECON 2013, 2023, 3013 and 3023; and
ii. successfully complete with a grade of C or better 15 ch of elective Economics courses or approved substitutes from disciplines other than Economics up to a maximum of 6 ch. Many upper level business courses qualify as approved substitutes; please see the list below.
NOTE: Students may not double count courses required for the general BBA.
Substitutes for Economics Courses: Degree requirements for certain programs permit some substitution of economics courses from other disciplines *as long as they are not being counted towards any other degree requirement*. The following programs permit these substitutions:
Bachelor of Business Administration with a Major in Economics
Bachelor of Arts Honours in Economics
Bachelor of Arts Major in Economics
Bachelor of Arts Double Major in Economics
Bachelor of Science in Economics
Bachelor of Science Mathematics and Economics Option
List of Approved Substitutes for Economics Courses
BA 3134   Government and Business
BA 3328   Consumer Behaviour
BA 3425* Managerial Finance (Note 1)
BA 3623* Management Science: Deterministic Models (Note 1)
BA 3624   Management Science: Probabilistic Models
BA 4437   Investment Analysis and Portfolio Management
BA 4455   Derivatives: Options and Futures
MATH 1013 Introduction to Calculus II [Note: MATH 1013 is a required course for BA (Hons. Econ)]
MATH 1503 Introduction to Linear Algebra **or** MATH 2213 Linear Algebra
MATH 2003 Intermediate Mathematics I
MATH 2013 Intermediate Mathematics II
MATH 2203 Discrete Mathematics
MATH 3303 Operations Research I
MATH 3713 Analysis I
MATH 3901 Financial Mathematic I
MATH 3903 Financial Mathematics II
PHIL 3153 Business Ethics
PHIL 3242 Philosophy of Human Science
POLS 3685 Politics of Food
POLS 3601 Contemporary Issues in World Politics
STAT 3793 Probability and Mathematical Statistics I
STAT 4203 Introduction to Multivariate Data Analysis
STAT 4243 Statistical Computing
STAT 4703 Regression Analysis
STAT 4793 Probability and Mathematical Statistics II
* **Note 1 BBA students please note:** Courses required for the BBA degree, or those similar to courses required for the degree [marked with an *] cannot be used as substitutes here. Arts or Science students may claim them, however. A student taking a double major cannot count a course towards both majors.
Students should consult the Economics Area Group coordinator at business@unb.ca about any other courses that they think could be considered as substitutes that have been omitted from this list.

XII. BBA with a Minor in Economics

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to minor in Economics must also comply with the following regulations

and requirements of the Faculty of Business and the Economics discipline:
A minor in Economics will be awarded to BBA students who achieve a minimum grade of C in:
i. ECON 2013 and ECON 2023 and
ii. any additional 9 credit hours in upper-level Economics courses. (ECON 2103 and ECON 3114 are recommended for 6 of the 9 credit hours.) Note: ECON 2103 will only be counted toward the minor in Economics if ECON 3114 is also completed.

XIII. BBA with a Major in French Communication and Culture

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to major in French must also comply with the following regulations and requirements of the Faculty of Business and the French discipline:
a. Students electing to major in French Communication and Culture should declare the major by the beginning of their third year. All courses taken to comply with the major requirement must be approved by the Department of Humanities and Languages and by the Faculty of Business.
b.
i. A BBA student who wishes to major in French Communication and Culture will normally have completed four term-courses in French (FR 1203, FR 1204 and FR 2203, FR 2204) and have received a grade of C or above. A student who has successfully completed a school French immersion program may begin a major in French Communication and Culture following completion of FR 1304 and 2304 with a grade of B or above. Students receiving a grade between C and B- in FR 2304 would normally proceed to FR 2203 and FR 2204. A BBA with a major including French Communication and Culture will consist of at least eight term-courses in French at the upper level.
ii. All students must earn a grade of C or above in FR 3203, FR 3204, FR 4204 and one of FR 3704, FR 3714, FR 3724 and four term-courses of approved French Communication and Culture upper-level electives.

XIV. BBA with a Major in French (Honours) Communication and Culture

In addition to the above requirements for the major, students must obtain a GPA of 3.3 on compulsory and elective term-courses required for the major.

XV. BBA with a Minor in French Communication and Culture

Students completing a French minor are required to complete at least four term-courses at the upper level in French Communication and Culture, with a maximum of 12 ch at the lower level (FR 1203, FR 1204 and FR 2203, FR 2204). FR 3203 and FR 3204 will be required; the remaining two term-courses will be chosen from advanced courses. A minimum grade of C, in lower level courses, and C, in upper level courses, is required. The minor must be declared at the same time as the major. Students who have completed FR 1304 and FR 2304 and are admitted into FR 3203 will also do four term-courses at the upper level.

XVI. BBA with a Major in Human Resources Management

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to major in Human Resource Management must also comply with the following regulations and requirements.
a. Students electing to major in Human Resource Management should declare the major by the beginning of their third year. The Faculty of Business must approve all courses taken to comply with the major requirement.
b. In order to earn the major in Human Resource Management, BBA students must:
i. Maintain a minimum 3.0 (B) grade point average in the 24 ch of courses (ii, iii), and
ii. Earn a minimum grade of C in the following compulsory courses: BA 2504, 2758, 2858, 3129, 3813 and 4898; and
iii. Earn a minimum grade of C in six credit hours of electives chosen from the following: BA 3547, 3557, 3715, 4813, 4853, 4854, 4855, 4856, 4857, 4866 and ECON 3375.

In order to be eligible to be granted a waiver of the National Knowledge Exam (NKE) administered by CPHR New Brunswick and CPHR Canada, graduates must have elected at least 2 of the following courses as their "electives" (in addition to the mandatory/"required" courses): BA 4853, BA 4854, BA 4855 and BA 4857.

XVII. BBA with a Major in Accounting

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to major in Accounting must also comply with the following regulations and requirements.
a. Students electing to major in Accounting should declare the major by the beginning of their third year. The Faculty of Business must approve all courses taken to comply with the major requirement.
b. In order to earn the major in Accounting, BBA students must in addition to the general requirements of the BBA degree:

i. Earn a minimum grade of C in the following compulsory courses. Please **NOTE** that (*) Denotes CPA entry courses. BA 2611*, BA 3224*, BA 3235*, BA 3236*, BA 4229*; and

ii. Earn a minimum grade of C in three of the following elective courses: BA 4207, BA 4221, BA 4223, BA 4231*, BA 4237*, BA 4238*, BA 4242;

iii. Earn a minimum grade of C in one of the following elective courses: BA 3426*, BA 4437, BA 4455, ECON 3114 or other approved finance course.

XVIII. BBA with a Major in Digital Business Design

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to major in Digital Business Design must also comply with the following regulations and requirements.

a. Students electing to major in Digital Business Design should declare the major by the beginning of their third year. The Faculty of Business must approve all courses taken to comply with the major.

b. In order to earn the major in Digital Business Design, BBA students must:

i. Earn a minimum grade of C in the following compulsory courses: BA 2123, BA 2663, BA 3131, BA 3133, BA 3135 and BA 3136.

ii. Earn a minimum grade of C in six credit hours of elective courses chosen from the following: BA 2611, BA 3305, BA 3328, BA 3661, BA 3718, BA 4108, BA 4223, BA 4866, COMS 2001; or any other 6 credit hours on approval of the Faculty.

XIX. BBA with a Major in Marketing

In addition to complying with the existing curriculum requirements and regulations governing the award of the BBA degree, BBA students wishing to major in Marketing must also comply with the following regulations and requirements.

a. Students electing to major in Marketing should declare the major by the beginning of their third year. The Faculty of Business must approve all courses taken to comply with the major requirement."

b. In order to earn the major in Marketing, BBA students must:

i. Maintain a minimum 3.0 (B) grade point average in the 27 ch of courses (ii, iii, iv), and

ii. Earn a minimum of grade C in the following compulsory courses: BA 2303, BA 3304, BA 3328, BA 3129, BA 4101; and

iii. Earn a minimum grade of C in a minimum of six credit hours of electives chosen from the following: BA 2501, BA 3123, BA 3134, BA 3301, BA 3305, BA 3339, BA 3371, BA 2611, BA 3661, BA 4107 or BA 4108, BA 4193, BA 4303, BA 4334, BA 4398. Note: students may count only BA 4107 OR BA 4108 toward the Marketing major, not both.

iv. Earn a minimum grade of C in a maximum of six credit hours of electives chosen from the following: PSYC 3412, PSYC 3313, PSYC 3503, PSYC 3493, PSYC 2401, SOCI 2250, SOCI 3214, SOCI 3517, SOCI 4315, PHIL 3153 or other course(s) as approved by the Faculty of Business

XX. BBA with a Minor in Mathematics

In addition to complying with the existing curriculum requirements and regulations governing the award of a BBA degree, BBA students wishing to minor in Mathematics must also comply with the following regulations and requirements.

A minor in Mathematics will be awarded to BBA students who achieve a minimum grade of C in:

i. MATH 1003, MATH 1013, and either MATH 1503 or MATH 2213, and

ii. an additional 15 ch in Math courses at second year level or above. Maximum 6 ch of approved substitutes may be allowed in consultation with the Department of Mathematics and Statistics.

XXI. Minor in Business for Non-Business Students

Non-business students may earn a minor in Business by successfully completing, with a grade of C or better, 24 credit hours of business courses as follows:

BA 1216 Accounting for Managers I
BA 1501 How Business Works
BA 2303 Principles of Marketing
BA 2504 Introduction to Organizational Behaviour

And any four additional business courses of which a minimum of 2 must be at the 3000 or 4000 level.

NOTE: Students are responsible for ensuring they have completed appropriate prerequisites for all business courses. Students should note, for example, that the prerequisite for BA 1216 is MATH 1853.

XXII. BBA Co-op Option

The Curriculum

The Faculty of Business offers a Co-operative Education option within the BBA program. While the program is designed to be completed in four years, students may take longer to complete the program. Students may also major and take the Co-op option. Consistent with the philosophy of Co-operative education, the program is designed to alternate study terms and relevant paid work terms, as follows:

Co-op Program Academic/Work Term Sequence

	Fall	Winter	Spring/Summer
	Sept-Dec	Jan-April	May-Aug
Year 1	Academic Term 1	Academic Term 2	
Year 2	Academic Term 3	*Work Term 1*	Academic Term 4
Year 3	*Work Term 2*	Academic Term 5	*Work Term 3*
Year 4	Academic Term 6	Academic Term 7	

Every co-op student shall complete three work terms with full-time academic semesters directly before and after each work term. Academic course requirements and work terms are listed in Table A.

TABLE A: Example of a typical student's program:

First Year

Fall Term (September - December)
BA 1501 How Business Works
MATH 1853 Math for Business I
ECON 1013 Intro to Economics - Micro
Social Science elective*
Humanities or Language Elective*

Winter Term (January - April)
BA 1605 Business Decision Analysis I
ECON 1023 Intro to Economics - Macro
BA 1216 Accounting for Managers I
Social Science elective
Humanities or Language Elective

Second Year

Fall Term (September - December)
BA 2217 Accounting for Managers II
BA 2504 Introduction to Organizational Behaviour
BA 2606 Business Decision Analysis II
Business Electives or Option Courses** - 9 ch (of which, it is recommended that 3 ch should be BA 2611 Business Data Visualization)

Winter Term (January - April)
Work Term I
BA 2903 Work Term Report I

Spring/Summer Term (May - August)
BA 2001 Business Communications
BA 2303 Principles of Marketing
BA 2858 Introduction to Human Resource Management
BA 3425 Managerial Finance
BA 3623 Management Science: Deterministic Models
Business Electives or Option Courses - 3 ch

Third Year

Fall Term (September - December)
Work Term II
BA 3903 Work Term II

Winter Term (January - April)
BA 3304 Marketing Management
BA 3653 Production and Operations Management
BA 3672 Introduction to Management Information Systems
BA 3705 Business Law
Business Electives or Option Courses - 6 ch

Summer Term (May - August)
Work Term III
BA 4903 Work Term III

Fourth Year

Fall Term (September - December)
BA 4101 Competitive Strategy
Business Electives or Option Courses - 15 ch

Winter Term (January - April)
Business Electives or Option Courses - 15 ch

NOTES:

* All students must include BA 1501 within their first 30 ch; 6 ch chosen from the Social Science disciplines of Anthropology, Political Science, Psychology or Sociology within their first 60 ch, and 6 ch from the Humanities and Languages disciplines of Classics, English, French, German, History, Humanities, Latin, Philosophy or Spanish within their first 60 ch.

** Option courses may be selected from the offerings of any faculty provided that the selections are in accord with regulations X. (3) and (4) of the Business Administration Curriculum and Degree Requirements of the university calendar, and provided they are approved by the Faculty of Business.

***The Co-op program considers students full-time when they are either participating in a Co-op work term, or when they are enrolled in at least 9 credit hours of course work (not including the work term reports: BA 2903, BA 3903, or BA 4903, or any required ESL support courses) in an academic term.

The sequence of academic terms and work terms outlined above is not flexible. Only in unusual circumstances will the Director or Coordinator of the Co-op Program approve deviation from the regular sequence.

If students' course selections deviate from the schedule above they are responsible for obtaining academic advising from either a Faculty of

Business or Co-op advisor. Students are responsible for their own academic planning and course selection.

Each work term is normally 12 to 16 weeks in duration.

**** Students pursuing the Co-op option are strongly encouraged to take BA 2611, Business Data Visualization, in order to ensure preparedness for upcoming Co-op work terms.

Admission
Students must apply for the Co-op program during their second semester. Entrance to the Co-op program is a four-step process, as follows:

Step One: Academic Achievement - Obtain a B- (2.7) average or higher after their first year to be eligible for the entry-level Professional Development Workshop Series.

Step Two: Professional Development - Successfully complete all required elements of the entry-level professional development seminars (PDSs) held the week before classes begin in September.

Step Three: Mock Job Interview - Successfully pass a mock job interview

Step Four: The Job Competition - Obtain a position for Work Term One.

Students who are unsuccessful in any one of the four steps will remain in the traditional BBA program. To remain eligible for each Co-op work term, students must attend and complete assignments for all mandatory professional development seminars in academic terms three, four, five and six.

For more information on the Co-op program, please contact the Co-op office at unbsjcoop@unb.ca. For information pertaining specifically to transfer students, please contact the Faculty of Business Advisor at sjadvising@unb.ca.

English Proficiency Policy for Students Entering the BBA Co-op Program
In addition to the above criteria, students must meet UNB English Proficiency requirements before commencing the Co-op Program.

Advancement
To complete the program and earn a Co-op designation, students must:

- Maintain a minimum GPA of 2.7 (B-) throughout the program
- Successfully complete all PDSs
- Perform satisfactorily in all three work terms
- Obtain CR on all three work reports

If a student's GPA falls below 2.7 but not lower than 2.5 in any one academic semester directly before or after the work terms, he/she will be placed on co-op program probation. For additional information, please refer to the co-op students' handbook.

Work Term Reports
The work term report plays a pivotal role in the success of our Co-operative Education Program. Work term reports BA 2903, BA 3903 and BA 4903 are written during the first, second and third work terms respectively. They are required courses carrying 1 credit hour each and are assigned a CR or NCR (pass or fail)

Students must achieve a CR on BA 2903, BA 3903 and BA 4903 to be allowed to continue in the program.

Students who withdraw or are required to withdraw from the co-op program before they have completed BA 2903, BA 3903 and BA 4903 may not use the credit from BA 2903 and/or BA 3903 and/or BA 4903 in conjunction with a lab credit toward their BBA degree.

The Co-op Fee
A comprehensive Co-operative Education Program includes many important components. Each component provides tangible benefits which are not offered to students in the traditional BBA program. Information on fees may be found in <u>Section C</u> of this calendar. Co-operative Education fees are used to develop and support the following areas:

1. Professional Development Seminars
2. Providing feedback to students in order to help them improve performance
3. Employer recruitment
4. Organizing job interviews with employers
5. Mid-Work term performance evaluations
6. Heightening the profile of our co-op program with schools, businesses, and community

Students who do not abide by Co-op Program regulations set out in the calendar and the Co-op Students' Handbook, available from the Co-op Office, will be asked to withdraw from the Co-op Program.

XXIII. Certificate Programs in Business Administration
General Regulations

1. The following regulations apply to the certificate programs in business:

   a. Certificate in Business Administration Level I, Certificate in Accounting, Certificate in Digital Business Design and Certificate in Human Resource Management:
   A maximum of 50% of total program requirements may be transferred from another degree, certificate or similar program whether taken at the University of New Brunswick or elsewhere. However, 50% of the required business courses must be taken at the University of New Brunswick. Courses taken more than five years ago will be approved on an individual basis.
   b. Business Administration Certificate Level II:

A maximum of 75% of total program requirements may be transferred from another degree, certificate or similar program taken at the University of New Brunswick. For students transferring credits from outside the University of New Brunswick, only 50% of total program credits will be transferable. However, 50% of the required business courses must be taken at the University of New Brunswick. Courses taken more than five years ago will be approved on an individual basis.

2. Each student entering a certificate program on a full-time basis must have the prior approval of the Faculty of Business.

3. A certificate will not be awarded to a student enrolled for a degree, but students who have withdrawn from an undergraduate degree program may apply for the appropriate certificate.

4. To earn the Certificate in Business Administration Level I, Level II, the Certificate in Accounting, or the Certificate in Digital Business Design a student must successfully complete the number of credit hours in approved courses specified for the certificate, achieve a grade of at least C in all specifically required courses and achieve a cumulative grade point average of at least 2.0.

5. To earn the Certificate in Human Resource Management, a student must achieve a cumulative grade point average of at least 3.0 (B) over 24 credit hours required, (excluding BA 1605 and BA 2606).

6. There is no minimum age and no specific *Prerequisites* for entrance into the Business Administration Certificate Level I, Level II or the Certificate in Accounting. Admission information concerning the Certificate in Digital Business Design is shown on page 12 and the Certificate in Human Resource Management on page 15 of the Certificate Programs brochure available from the Faculty of Business or at: www.unbsj.ca/business/students/advising. Although, there are no specific entrance requirements for the Business Administration Certificate Level I, Level II or the Certificate in Accounting students will undertake university-level study and assignments demanded in degree-credit courses. Some courses such as Finance, Computer Science and Business Decision Analysis require at least a background knowledge of high school mathematics.

7. To earn the Certificate in Nursing Leadership and Management, a student must successfully complete the number of approved courses specified for the certificate, and achieve a grade of C in all required courses.

General Information
Admission:
The certificate programs are open to all interested individuals. With the exception of the Certificate in Digital Business Design, the Certificate in Human Resource Management, and the Certificate in Nursing Leadership and Management, there are no specific academic *Prerequisites* for students enrolled in the business certificate programs on a part-time basis, only a desire and willingness on the part of the student to engage in learning at a university level. However, students engaged in full-time study must receive Faculty approval to be admitted to the program. Application forms are available at: <u>www.unbsj.ca</u> or from the Admissions Office (506) 648-5674.

Additional Information:
A brochure entitled "Certificate Programs in Administration" provides full information on regulations and course requirements and can be obtained by dialing (506) 648-5570 or 1-800-50-UNBSJ, by writing to The Faculty of Business, University of New Brunswick, P.O. Box 5050, Saint John, NB, E2L 4L5, or emailing <u>business@unbsj.ca</u>. It may also be viewed and printed at: www.unbsj.ca/business/students/advising.

Business Administration Certificate Level I
Requirements:
A Business Administration Certificate Level I will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 30 credit hours required, and

b. successfully complete (with a C or better):

BA 1216	Accounting for Managers I (See **NOTE** A)	3 ch
BA 2217	Accounting for Managers II	3 ch
BA 2303	Principles of Marketing	3 ch
BA 2504	Introduction to Organizational Behaviour	3 ch
BA 3425	Managerial Finance	3 ch
	Plus six credit hours in Economics (ECON 1013 and 1023)	6 ch
	Business Elective	3 ch
	Plus six credit hours of non-business courses to be approved by the Faculty of Business (see **NOTE** B)	6 ch
		30 ch

NOTES:
A. Although, the usual Math *Prerequisites* are waived for certificate students, it is recommended that students planning to proceed with the following: Business Administration Certificate Level II, Human Resource Management Certificate or the BBA or BAM degrees choose Math 1853 as an elective before studying BA 1216 and BA 1605. Most business courses have *Prerequisites*. Students who do not have credit for grade 12

academic Math and who intend to continue on to the BBA degree are urged to take MATH 1863 as one of their Business Administration Certificate Level I electives.
B. **NOTE** that although MATH 1863 is a credit towards the Certificate, it cannot be used as a credit towards the BBA, or BAM degrees.

Business Administration Certificate Level II:
Requirements:
The requirements for the Business Administration Certificate Level II are stated in terms of cumulative credit hours. The 30 credit hours required for the Business Administration Certificate Level I are included as part of the stated requirement of 60 credit hours for the Business Administration Certificate Level II.
A Business Administration Certificate Level II will be awarded to individuals who:
a. achieve a cumulative grade point average of at least 2.0 over the 60 credit hours required, and
b. successfully complete (with a C or better):

BA 1216	Accounting for Managers I (see **NOTE** C)	3 ch
BA 1605	Business Decision Analysis I (see **NOTE** C)	3 ch
BA 2217	Accounting for Managers II	3 ch
BA 2303	Principles of Marketing	3 ch
BA 2504	Introduction to Organizational Behaviour	3 ch
BA 2606	Business Decision Analysis II	3 ch
BA 2858	Introduction to Human Resources Management	3 ch
BA 3425	Managerial Finance	3 ch
	Plus six credit hours in Economics ECON 1013 and 1023	6 ch
	Plus a total of 30 credit hours in Arts (Humanities, Social Science, Languages and Mathematics), Business Administration, Computer Science, Data Analysis, Engineering or Science. (See **NOTES** A& B).	30 ch
		60 ch

NOTES:
A. Students who plan to enrol in the Business Administration degree program (BBA) after completing the Business Administration Certificate Level II are advised to elect MATH 1863 (if necessary), MATH 1853,as part of their certificate program.
B. Six (6) credit hours in Humanities or Languages and six (6) credit hours in Social Sciences (other than Economics) must be completed within the Business Administration Certificate Level I requirements and/or the 30 optional credit hours of Business Administration Certificate Level II.
C. The normal prerequisite will be waived for students registered in this program.

Certificate in Accounting
Requirements:
A Certificate in Accounting will be awarded to individuals who:
a. achieve a cumulative grade point average of at least 2.0 over the 33 credit hours required, and
b. successfully complete (with a C or better):

BA 1216	Accounting for Managers I (see **NOTE** A below)	3 ch
BA 1605	Business Decision Analysis I (see **NOTE** A below)	3 ch
BA 2217	Accounting for Managers II	3 ch
BA 3224*	Accounting for Managers III	3 ch
BA 3235*	Intermediate Accounting I	3 ch
BA 3236*	Intermediate Accounting II	3 ch
BA 3425	Managerial Finance	3 ch
BA 3672	Intro to Management Information Systems	3 ch
BA XXXX	Accounting Elective chosen from BA 4221, BA 4223, BA 4231*, BA 4237*, BA 4238*, BA 4242	3 ch
BA 4229*	Advanced Financial Accounting	3 ch
	Accounting or Finance Elective (See **NOTE** B below)	3 ch
		33 ch

NOTE:
A. The normal prerequisite for this course will be waived for students registered in this program.
B. 3 ch Accounting or Finance elective chosen from BA 3421, BA 3426*, BA 4221, BA 4223, BA 4237*, BA 4238*, BA 4242, BA 4437, or BA 4455 or other course(s) approved by the Faculty of Business.
*Denotes CPA entry courses

Certificate in Community Leadership
Eligibility
Open to BBA and BAM students at UNB Saint John who will be entering the 3rd year of their program.

- Applicants must have a CGPA of 2.7 or higher.
- Applicants must have a combination of academic success, community service and other extra-curricular activities.

Admission

- Complete and submit an application form.

- Submit a statement outlining your interest in the program and explaining your vision of the role of community leaders.
- Submit a resume detailing community service and extra-curricular activities you have been or currently are involved in.
- Submit an unofficial transcript.

For continued participation in the program students will be required to maintain a CGPA of 2.7 or higher. Enrolment in the program will be limited to a maximum of 15 students each year.

Certificate in Digital Business Design
Admission to the Certificate in Digital Business Design program will require a minimum of either:

1. 30 credit hours at a recognized post-secondary institution with a minimum cumulative grade point average of 2.7 (B-) or
2. At least one year's relevant work experience in the electronic commerce area to be approved on an individual basis by the Dean in exceptional circumstances.

Requirements
A certificate in Digital Business Design will be awarded to individuals who:
a. achieve a cumulative grade point average of at least 2.0 over the 30 credit hours required, and
b. successfully complete (with a C or better):

BA 1216	Accounting for Managers (See **NOTE** below)	3 ch
BA 2123	Introduction to Digital Business	3 ch
BA 2303	Principles of Marketing	3 ch
BA 2504	Introduction to Organizational Behaviour	3 ch
BA 2663	Technology Trends in Digital Business	3 ch
BA 3131	Creative Problem Solving	3 ch
BA 3133	Business Model Validation	3 ch
BA 3135	Design Thinking	3 ch
BA 3136	Customer-Focused Innovation	3 ch
	Plus 3 credit hours of electives chosen from the following	3 ch
BA 2611	Business Data Visualization	
BA 3305	Marketing on the Internet	
BA 3328	Consumer Behaviour	
BA 3661	Supply Chain Management	
BA 3718	Legal, Privacy and Security Issues in Electronic Commerce	
BA 4108	Management of New Enterprise	
BA 4223	Accounting Information Systems	
BA 4866	Management of Technology	
COMS 2001	Transformations in Media	
	Or any other three hours on approval	
		30 ch

NOTE: The normal prerequisite for this course will be waived for students registered in this program.

Certificate in Human Resources Management
Admission to the Certificate in Human Resource Management program will require a minimum of either:
1. 30 credit hours at a recognized postsecondary institution with a minimum cumulative grade point average of 2.7 (B-) in all course work completed, or
2. At least 24 months of relevant work experience in the human resource area to be approved on an individual basis by the Faculty of Business in consultation with Organizational Behaviour/Human Resource Management faculty.
Because the courses offered in this program are largely upper level, the above admission criteria will be waived only in the most exceptional circumstances. However, if an applicant to the program believes that his or her application deserves special consideration related to either of the criteria above, he or she may submit a Permission and Request form to the Faculty of Business undergraduate studies office with an explanation for the reason for the request.
Requirements:
The Certificate in Human Resource Management will require the successful completion of 10 term-courses (30 credit hours) as detailed below. For those candidates who have already received credit for more than fifteen credit hours of required courses, course selections may be made from the list of electives as replacements for any credit hours above fifteen.
A Certificate in Human Resource Management will be awarded to individuals who:
a. Achieve a cumulative grade point average of at least 3.0 (B) over 24 credit hours required, (excluding BA 1605 and BA 2606); and
b. Successfully complete (with C or better):

BA 1605	Business Decision Analysis I (See **NOTE** below)	3 ch
BA 2504	Introduction to Organizational Behaviour (See **NOTE** below)	3 ch
BA 2606	Business Decision Analysis II	3 ch
BA 2758	Employment Law	3 ch

BA 2858	Introduction to Human Resource Management	3 ch
BA 3129	Business Research Methods	3 ch
BA 3813	Introduction to Industrial Relations	3 ch
BA 4898	Strategic Human Resource Policy	3 ch
	Plus 6 credit hours of electives chosen from the following:	6 ch
BA 3457	Organizational Communication (3 ch)	
BA 3557	The Management of Planned Change (3 ch)	
BA 3715	Labour Law (3 ch)	
BA 4813	Negotiations and Dispute Resolutions (3 ch)	
BA 4853	Recruitment and Selection (3 ch)	
BA 4854	Training and Development (3 ch)	
BA 4855	Compensation Structure Development (3 ch)	
BA 4856	Evaluating and Rewarding Employee Performance (3 ch)	
BA 4857	Management and Occupational Health and Employee Wellness (3 ch)	
BA 4866	Management of Technology (3 ch)	
		30 ch

NOTE: The normal prerequisite for this course will be waived for students registered in this program.

Certificate in Economics

This certificate is a stand-alone program intended for visiting international students and for members of the community interested in economics. It will not be awarded to a student enrolled in a degree program, but students who have withdrawn from an undergraduate degree program may apply. A maximum of 50% of required credits may be transferred from another degree, certificate, or similar program, whether taken at UNB or elsewhere.

The Certificate requires completion of 8 term-courses including ECON 1013, ECON 1023, ECON 2013, ECON 2023, plus an additional four courses in Economics at or above the 2000 level. To earn a Certificate, a student must achieve a grade of at least a C in all specifically required courses, and achieve a cumulative grade point average of at least 2.0. While no specific *Prerequisites* are required for admission to this Certificate program, a background in high school mathematics is strongly recommended.

Certificate in Financial Markets

The Certificate requires completion of at least 8 term-courses including BA 1216, ECON 1013, ECON 1023, ECON 2013, ECON 2023, ECON 2103, ECON 3114, plus one additional course in Business or Economics which is in Accounting, Finance, or International/Macro Economics.

To earn a Certificate, a student must achieve a grade of at least a C in all specifically required courses, and achieve a cumulative grade point average of at least 2.0. While no specific *Prerequisites* are required for admission to this Certificate program, a background in high school mathematics is strongly recommended.

Certificate in Nursing Leadership and Management

The certificate program in Nursing Leadership and Management is an online program; with components of onsite learning, specifically designed to meet the needs of nursing professionals starting their career in or aspiring towards leadership positions in health care. This program will enhance participants' knowledge skills and abilities to develop the necessary skills in demonstrating:

- exemplary leadership skills
- critical thinking and problem-solving
- effective human resource management
- excellent team building and conflict resolution
- quality patient care monitoring
- creating healthy and effective workplace cultures

All course content is relevant for working in healthcare environments (acute, community and long-term care) in Canada. This program offers participants an online learning environment with components of onsite learning. The participants will have the opportunity to engage in critical reflection and receive feedback to facilitate their professional development as charge nurses, unit managers and leaders in healthcare. The onsite sessions will provide an opportunity for group learning and time to engage and network with peers. The courses address topics commonly experienced by healthcare managers such as communication, conflict resolution, negotiating skills, promoting positive change, staff scheduling, monitoring, and supporting employee performance.

Length of the Program

The program is comprised of 5 (3 ch) courses. Completion of all courses leads to a Certificate in Nursing Leadership and Management. A certificate is normally completed within 2 years of initial enrolment; however, courses will count towards credit for up to 5 years.

Admission Requirements to the Certificate in Nursing Leadership and Management
1. Completed bachelor's degree in any discipline and current membership in good standing with the Nurses Association of New Brunswick (NANB).
2. Language requirements:
https://www.unb.ca//international/admission/english.html
Certificate Requirements:
successfully complete (with a C or better):

BA 5001	Communication in the Healthcare Environment	3ch
BA 5504	Change Leadership in Healthcare Environments	3 ch
BA 5858	Introduction to Human Resources in Healthcare	3 ch
BA 5859	Quality Management in Healthcare	3 ch
BA 5209	Introduction to Financial Stewardship in the Non-Profit Sector	3 ch
	Total	15 ch

BACHELOR OF HEALTH SCIENCES
Department of Nursing and Health Sciences

General Office:	K.C. Irving Hall Room 329
Mailing Address:	UNBSJ Department of Nursing and Health Sciences, University of New Brunswick, 100 Tucker Park Road, P.O. Box 5050, Saint John, N.B., Canada, E2L 4L5
Phone:	(506) 648-5542
Fax:	(506) 648-5785
Email:	nursingsj@unb.ca
Website:	http://www.unb.ca/saintjohn/sase/dept/nhs/index.html

FACULTY
Chair: Hamilton, Catherine

- Banks, Angela, BN (UNB), MN (UNB), Diploma in University Teaching (UNB) - Instructor – 2016
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Associate Prof – 2010
- Dupont, Diana, BN (UNB), MN (UNB), Instructor – 2018
- Edwards, Rosanne, BA (U of Ottawa), BSCN (U of Ottawa), MSCN (U of Ottawa), PhD (U of Ottawa), Assistant Prof - 2020
- Furlong, Karen, RN Dip (SJSN), BN (UNB), MN (UNB), PhD (UNB), Diploma University Teaching (UNB), CNA Certification Neuroscience Nursing, Sr Teaching Assoc – 2000
- Gregg, Emily, BN (UNB), MN (UNB), PhD (c) (Queens University), Instructor – 2019
- Hamilton, Catherine, BSN (Duke University), Certified Nurse-Midwife, MSc (Yale University), ARNP, MSN, PhD (University of Florida), Assistant Professor – 2019
- Hatfield, Meagan, BN (UNB), MN (Athabasca University), Instructor - 2019
- Keeping-Burke, Lisa, BN (MUN), MN (MUN), PhD (McGill), Asst Prof – 2012
- Manzer, Dana, RN Dip., BN (UNB), MN-PHCNP (AU), Diploma in University Teaching, PhD (UNB), Asst Prof - 2018
- Mawhinney, Kathleen, BN (UNB), MN (UNB), Diploma in University Teaching (UNB), Sr Teaching Associate - 2010
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN (UNB), PhD (UNB), CNA Certification Gerontology, Diploma University Teaching (UNB), Prof – 2000
- O'Brien-Larivee, Catherine, BN (UNB), MSc Applied Nursing (McGill), Diploma University Teaching, Sr Teaching Assoc – 2004
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA certification Perinatal Nursing, Sr. Teaching Assoc – 2002
- Shamputa, Isdore Chola, BSc (UNZA), MSc, PhD (VUB), Visiting Postdoctoral Fellow (NIH), BScN (Dalhousie University), Certification in Microbiology (Canadian College of Microbiologists), Assistant Professor - 2018
- Simpson,Catharine, BN (UNB), MN (Athabasca University) DUT (UNB). Instructor - 2019
- Waycott, Loretta, BA (STU), BN (UNB), MN (Athabasca University) Instructor - 2019

The Bachelor of Health Sciences (BHS) degree program is offered in conjunction with health sciences education partners. While students may be initially admitted directly into this intended degree, subsequent admissions to a competitive BHS major is required. Admission to a major is based on acceptance by a Canadian Medical Association (CMA) or Council on Accreditation for Respiratory Therapy Education (CoARTE) accredited program. Alternatively, applicants who have already completed an accredited and approved health science program and are qualified to practice (as recognized by the appropriate national and provincial bodies) can also apply for entry. Current programs partnered with UNB Saint John to deliver BHS majors include:

- Radiography Saint John (Partner: Saint John School of Radiological Technology)
- Radiography Moncton (Partner: Moncton Hospital School of Radiographic Technology)
- Respiratory Therapy: (Partner: New Brunswick Community College)
- Respiratory Therapy: (Parner: College Communautaire du Nouveau-Brunswick)

Application to partner program occurs directly to the UNB Saint John Department of Nursing and Health Sciences. As the application process is competitive, seats within partner programs are limited, and students who meet the minimum requirements are not guaranteed acceptance to a major. Students who are unsuccessful at gaining admission to a partner program may remain BHS designated students while the plan for future applications. However, students may be advised to consider alternative

program options if they are unable to gain admission to a partner program in order to declare a major.

To earn the degree, students must successfully complete 133 credit hours. **NOTE:** 68 credit hours are required to take be taken at UNB and 65 credit hours are allotted on successful completion of the accredited partner program.

Admission Policy on English Language Proficiency
The language of our program is English and prospective students whose mother tongue is not English may prove English language proficiency in one of the following ways:

i. Minimum TOEFL score on a paper-based test of 600.
ii. Minimum CanTEST scores of 5.0 on reading and listening, and 4.5 on writing.
iii. A minimum of 4 years full-time study in the English language in Canada.

Notwithstanding the above, students must demonstrate competence in speaking, listening, reading and writing English to meet course requirements.

Required Courses
Year 1*:
- MATH 1001 (3 ch) or MATH 1003 (3 ch)
- BIOL 1441 / BIOL 1442 (8 ch)
- CHEM 1041 / CHEM 1072 (6 ch)
- PHYS 1011 (3 ch)
- PSYC 1003 / PSYC 1004 (6 ch)
- HSCI 2001 (3 ch)
- HUM 1021 or equivalent (3 ch)
- STAT 2263
- one elective of 3000/4000 level (3 ch)

*Consideration may be made for students with prior courses equivalent to past BHS requirements. Courses will be assessed based on the requested BHS program and must be approved by the Department of Nursing and Health Sciences.

Years 2, 3, and 4:
In addition to the requirements of the appropriate accredited program, students must complete the following University courses:

- BIOL 3251 (3 ch)
- COMS 2201 (3 ch)
- HSCI 3061 (3 ch)
- HSCI 3092 (3 ch)
- HSCI 4142 (3 ch)
- PHIL 3133 (3 ch)
- PSYC 3033 (3 ch)
- one elective - 3000/4000 level in PSYC, NURS or BIOL (3 ch)
- one elective - 3000/4000 level (3 ch)
- one elective - any level (3 ch)
- one 3 ch PSYC course from: PSYC 3383, PSYC 3693, PSYC 3711*, PSYC 3723, PSYC 3724 or PSYC 3752 (*strongly recommened) (3 ch)

Bachelor of Health Sciences Respiratory Therapy Post Diploma Entry
The program is meant to meet the needs of practicing Respiratory Therapist (RT). The program offers opportunities for development of leadership skills required to work in the healthcare environment and prepares those who are interested in life-long learning who may be interested in pursuing graduate education.

The post diploma BHS curriculum is equivalent to **2 years of full-time university study (60 credit hours)**. Courses may be completed in the sequence best suited for the student; however, attention must be paid to course pre-requisites. The post diploma program is available on a full time or part-time basis. Program must be completed within 5 **years of** registration of the first course.

Admission Requirements – BHS Respiratory Therapy Post Diploma
Respiratory Therapists (RT) will be able to gain access to the Post Diploma Entry to Bachelor of Health Sciences. Eligible students require successful completion of High School MATH 112 with a *minimum* grade of 60%. and provide proof of current registration with the New Brunswick Association of Respiratory Therapists (NBART) in good standing. The Admission Policy on English Language Proficiency as described above applies to the Post Diploma Entry to BHS.

Required Courses - BHS Respiratory Therapy Post Diploma
- HUM 1021 (3 ch)
- HSCI 2001 (3 ch)
- BIOL 3251 (3 ch)
- PSYC 1003 / PSYC 1004 (6 ch)
- STAT 2263 (3 ch)
- HSCI 3061 (3 ch)
- HSCI 3092 (3 ch)

- PHIL 3133 (3 ch)
- PSYC 3033 (3 ch)
- COMS 2201 (3 ch)
- HSCI 4142 (3 ch)

- ECON 3813 (3 ch)
- HIST 4421 (3 ch)
- HIST 4945 (3 ch)
- PHIL 3134 (3 ch)
- POLS 3501 (3 ch)
- POLS 3685 (3 ch)
- SOCI 4555 (3 ch)

Elective Courses - BHS Respiratory Therapy Post Diploma

Please note: One course must be at the 3000/4000 level and one course must be a PSYC elective. Total electives must equal 24 credits hours or 8 courses from the following list of 3ch courses:

- ABRG 1002
- BA 1216, 2504, 2758, 2858
- PSYC 2401, 3293, 3323, 3362, 3343, 3725
- SOCI 1001, 2008, 2376

Note: Additional courses may be considered for elective credit at the discretion of the Nursing and Health Sciences program coordinator.

Health Sciences Minor

The Health Sciences Minor is is open to any student in a discipline that has a provision for a minor. To be considered, students must have completed the 60 ch (i.e. for full-time terms) with a minimum GPA of 2.0. Interested students may contact the Nursing and Health Sciences Program Coordinator for academic advising.

The Minor in Health Sciences requires 24 ch with a minimum grade of C in each course consisting of:

Required Courses – Health Sciences Minor - 12 ch:

- HSCI 2001 (3 ch)
- HSCI 3061 (3 ch)
- PSYC 3033 (3 ch)
- PHIL 3133 (3 ch)

Required Electives – Heatlh Sciences Minor - 12 ch:

- minimum 3 ch per course
- maximum of 9 ch from the lower (1/2xxx) level.
- maximum of 6 ch from two groupings: Life & Behavioural Sciences and Social Sciences/Humanities/Business

Students are responsible for ensuring they have completed appropriate prerequisites for any selected courses in the Health Sciences minor.

The Nursing and Health Sciences Program Coordinator may approve the use of courses for Life & Behavioural Sciences Grouping or Social Sciences/Humanities/Business Grouping electives on an individual basis.

Life & Behavioural Sciences Groupings:

Lower Level:

- BIOL 1205 (3 ch)
- BIOL 1411 (3 ch) & BIOL 1441 (4 ch)
- BIOL 1412 (3 ch) or BIOL 1442 (4 ch)
- BIOL 2015 (4 ch)
- BIOL 2485 (4 ch)
- BIOL 2831 (3 ch)
- BIOL 2852 (3 ch)
- STAT 2263 (3 ch)

Upper Level:

- BIOL 3132 (3 ch)
- BIOL 3245 (4 ch)
- BIOL 3275 (4 ch)
- BIOL 3665 (4 ch)
- PSYC 3293 (3 ch)
- PSYC 3343 (3 ch)
- PSYC 3723 (3 ch)
- PSYC 3724 (3 ch)
- PSYC 3725 (3 ch)
- PSYC 3752 (3 ch)
- PSYC 4813 (3 ch)
- PSYC 4833 (3 ch)

Social Sciences/Humanities/Business Groupings

Lower Level:

- BA 2001 (3 ch)
- BA 2504 (3 ch)
- BA 2758 (3 ch)
- ECON 2213 (3 ch)
- PHIL1053 (3 ch)
- POLS 1201 (3 ch)
- SOCI 2376 (3 ch)

Upper Level:

- BA 3457 (3 ch)
- ECON 3775 (3 ch)

BACHELOR OF HEALTH
General Information
The Bachelor of Health is a 4-year interdisciplinary program offered by the Faculties of Arts, Business and Science, Applied Science, & Engineering. The program provides students with both interdisciplinary knowledge and the specific skills necessary for success in a variety of career in the health sector and will prepare them for the professional programs and associated entrance exams. The program features a common academic entry in which students engage with biomedical, societal approaches to health and wellness, and to the management of healthcare services. Throughout the program, students will complete specifically designed courses that provides interdisciplinary health courses. In year two, courses relevant to all three majors 1.) Society and Health 2.) Management in Health, or 3.) Biomedical Sciences and Health. Each major consists of disciplinary courses relating to the major and topical courses in health fostering academic exchanges on broadly applicable topics in health from different perspectives. In years three and four, students will complete their major requirements and advanced health courses. In the fourth year, students will complete a two-term project that focuses on solutions of health-related issues through interdisciplinary collaboration. Students are encouraged to meets with an academic advisor every year to assess their progression through the program. For information on admissions and university regulations, please consult section B of the University calendar.
Requirements
To earn the degree in Bachelor of Health, students must successfully complete a minimum of 126 credit hours with a minimum of grade of C in required HEAL courses and required courses for the major. A grade of D will be considered for program credit only in certain circumstances. Students are responsible for ensuring that they have completed the necessary prerequsites for the required courses and required electives.
Required courses for the degree in the Bachelor of Health (66 ch):
BA 1501 Introduction to Business (3 ch)
BIOL 1105 Biological Principles, Part I (3 ch)
BIOL 1205 Biological Principles, Part II (3 ch)
BIOL 1017 Applications in Biology, Part II (2 ch)
CHEM 1041 General Chemistry I (3 ch)
CHEM 1072 General Chemistry II (3 ch)
CHEM 1046 Introductory Chemistry Laboratory I (2 ch)
CHEM 1077 Introductory Chemistry Laboratory II (2 ch)
HEAL 1001 Current Issues and Future Trends in Health (3 ch)
HEAL 1002 Introduction to Health from a Global Perspective (3 ch)
HEAL 2001 Health Communications (3 ch)
HEAL 2002 Introduction to Data Analytics & Health Information Technology (3 ch)
HEAL 2003 Methods in Health Research and Information Literacy (3 ch)
HEAL 3001 History and Structure of the Canadian Health Care System (3 ch)
HEAL 3002 Indigenous Health Determinants (3 ch)
HEAL 4001 Transformation Through Collaboration & Innovation I (3 ch)
HEAL 4002 Transformation Through Collaboration & Innovation II (3 ch)
HIST 2514 First Nations in North America to the War of 1812 (3 ch) OR ABRG 1002 Introduction to Indigenous Studies (3 ch)
PSYC 1003 Introductory Psychology I (3 ch)
PSYC 1004 Introductory Psychology II (3 ch)
SOCI 1001 Introduction to Sociology (3 ch)
SOCI 2376 Sociology of Health, Illness and Healing (3 ch)
STAT 2263 Statistics for Health Sciences and Non-Science Majors (3 ch)

Plus the specific requirements for the chosen major.
Major in Society and Health
The Society and Health major will attract students seeking knowledge and skills to prepare for careers in health services, public health, recreational services as well as professional programs.

- *Required courses for the major (12 ch)* (please note prerequisites may apply)
  ECON 3813 Introduction to Health Economics (3 ch)
  POLS 1201 Canadian Politics I (3 ch)
  POLS 1301 Global Political Studies (3 ch) or POLS 2601 Introduction to International Politics (3 ch)
  PSYC 3033 Health Psychology (3 ch)
- *Required elective courses* (please note prerequisites may apply):
  A minimum of 18 ch of required electives chosen from:
  HIST 4945 Women, Science, and Medicine (3 ch)
  PHIL 3133 Health Care in Ethics I (3 ch)
  PHIL 3134 Health Care in Ethics II (3 ch)
  POLS 3501 Contemporary Issues in Public Policy (3 ch)
  POLS 3632 Urbanization, Poverty and Politics (3 ch)
  POLS 3683 Human Rights (3 ch)
  POLS 3685 The Politics of Food (3 ch)
  POLS 4505 Politics, Policy and Prostituition (3 ch) or SOCI 4505 Society and Sex Work (3 ch)
  SOCI 3376 Mental Health, Addictions & Wellbeing (3 ch)
  SOCI 4379 Community-Based Health Research Seminar (3 ch)
  HEAL 4004 Honours Research Seminar (3 ch)
  HEAL 4301 Advanced Topics in Society and Health (3 ch)
- *General elective courses* (please note prerequisites may apply):
  A maximum of 30 ch of General Electives

Note: It is recommended that students take PHIL 1001 Introduction to Philosophy I (3 ch) OR PHIL 1053 Introduction to Logic, Reasoning and Critical Thinking (3 ch)
Major in Management in Health
The Major in Management in Health will attract students who are interested in health administration looking to work in the managing of people or processes/systems or in the planning, marketing, financial oversight, and logistical deployment of health services across various organizations within the health sector and with insurance companies or within information, legal, public sector, not-for-profit or private sectors.

- *Required courses for the major (24 ch)* (please note prerequisites may apply)
  BA 1216 Accounting for Managers I (3 ch)
  BA 2217 Accounting for Managers II (3 ch)
  BA 2303 Princioles of Marketing (3 ch)
  BA 2504 Introduction to Organizational Behaviour (3 ch)
  BA 2858 Introduction to Human Resources Management (3 ch)
  ECON 1013 Introduction to Microeconomics (3 ch)
  ECON 1023 Introdcution to Macroeconomics (3 ch)
  ECON 3813 Introduction to Health Economics (3 ch)
- *Required elective courses* (please note prerequsits may apply):
  A minimum of 15 ch for required electives chosen from:
  BA 2123 Introduction to Digital Business (3 ch)
  BA 2606 Business Decision Analysis II (3 ch)
  BA 2611 Business Data Visualization (3 ch)
  BA 2758 Employment Law (3 ch)
  BA 3224 Accounting for Managers III (3 ch)
  BA 3235 Intermediate Accounting I (3 ch)
  BA 3236 Intermediate Accounting II (3 ch)
  BA 3304 Marketing Management (3 ch)
  BA 3305 Marketing on the Internet (3 ch)
  BA 3328 Consumer Behaviour (3 ch)
  BA 3339 Marketing Communications (3 ch)
  BA 3371 Marketing of Services (3 ch)
  BA 3425 Managerial Finance (3 ch)
  BA 3426 Corporate Finance (3 ch)
  BA 3547 Organizational Communication (3 ch)
  BA 3557 The Management of Planned Change (3 ch)
  BA 3623 Management Science: Deterministic Models (3 ch)
  BA 3653 Operations Management I (3 ch)
  BA 3654 Opertations Management II (3 ch)
  BA 3661 Supply Chain Management (3 ch)
  BA 3672 Introduction to Management Information (3 ch)
  BA 3715 Labour Law (3 ch)
  BA 3813 Introduction to Industrial Relations (3 ch)
  BA 4101 Competitive Strategy (3 ch)
  BA 4229 Advanced Financial Accounting I (3 ch)
  BA 4231 Advanced Financial Accounting II (3 ch)
  BA 4334 Public and Non-Public Marketing (3 ch)
  BA 4813 Negotiations and Dispute Resolutions (3 ch)
  BA 4855 Compensation Structure Development (3 ch)
  BA 4857 Management of Occupational Health and Employee Wellness (3 ch)
  BA 4898 Strategic HRM Policy (3 ch)
  ECON 2013 Intermediate Microeconomics (3 ch)
  ECON 2023 Intermediate Economics (3 ch)
  ECON 2213 Poverty, Inequality and Income Redistribution (3 ch)
  ECON 3213 Public Sector Economics (3 ch)
  ECON 3375 Labour Economics (3 ch)
  ECON 3542 Topics in International Development (3 ch)
  ECON 3755 Environmental Economics (3 ch)
  HEAL 4004 Honours Research Seminar (3 ch)
  HEAL 4501 Topics in Management in Health (3 ch)
  MATH 1853 Mathematics for Business (3 ch)
  PSYC 3401 Social Psychology (3 ch)
  Or other electives as approved by the Faculty of Business
- *General elective courses* (please note prerequisites may apply):
  A maximum of 21 ch of general electives

NOTE: A maximum of 12 of the total 36 ch of required electives and general electives may be at the Introductory level.
Major in Biomedical Sciences and Health
The Biomedical Sciences and Health Major provides students with the knowledge and skills necessary for a variety of careers. Students who complete this major will be prepared for research, medical device sales, and allied health careers. Students in this major will also gain the knowledge necessary to prepare for professional program entrance exams (medicine, dentistry, etc.).

To earn a Bachelor of Health with a major in Biomedical Sciences and Health, students must complete a minimum of 130 credit hours.

- *Required courses for the major (29 ch)* (please note prerequisites may apply)
  BIOL 1441 Human Anatomy and Physiology I (4 ch)
  BIOL 1442 Human Anatomy and Physiology II (4 ch)
  BIOL 3853 Introduction to Pathophysiology (3 ch)
  CHEM 2421 Organic Chemistry I (3 ch)
  PSYC 2712 Foundations in Neuroscience (3 ch)
  PSYC 3033 Health Psychology (3 ch)
  Any 4th year seminar in Psychology (3 ch)
  6 ch in HEAL courses focused on Biomedical Sciences (courses designated as 3100-3299; 4100-4299)

- *Required elective courses* (please note prerequisites may apply):
  A minimum of 8 ch of required electives chosen from:
  BIOL 2015 Introductory Genetics (4 ch)
  BIOL 2485 Introduction to Microbiology (4 ch)
  BIOL 2245 Introductory Molecular Cell Biology (4 ch)
  BIOL/CHEM 2065 Introductory Biochemistry (4 ch)

  A minimum of 15 ch of required electives chosen from:
  BIOL 2015 Introductory Genetics (4 ch)
  BIOL 2485 Introduction to Microbiology (4 ch)
  BIOL 2245 Introductory Molecular Cell Biology (4 ch)
  BIOL/CHEM 2065 Introductory Biochemistry (4 ch)
  BIOL 2615 Introductory Zoology (5 ch)
  BIOL 3132 Advanced Biochemistry (3 ch)
  BIOL 3435 Biomolecules and Primary Metabolism (3 ch)
  BIOL 3022 Evolution (3 ch)
  BIOL 3553 Introduction to Bioinformatics (4 ch)
  BIOL 3055 Animal Physiology (4 ch)
  BIOL 3635 Animal Physiology II (4 ch)
  BIOL 4245 Molecular Ecology (4 ch)
  CHEM/BIOL 4435 Biologically Active Natural Products and Secondary Metabolism (3 ch)
  HEAL 3101 Molecular and Cellular Basis of Cancer (3 ch)
  HEAL 3102 Clinical Neuroscience (3 ch) OR PSYC 3724 Introduction to Clinical Neuropsychology (3 ch)
  HEAL 3103 The Neurobiology of Learning (3 ch)
  HEAL 4004 Honours Research Seminar (3 ch)
  HEAL 4101 Advanced Topics in Biomedical Science (3 ch)
  HEAL 4102 Neuroplasticity (3 ch)
  HEAL 4103 Epilepsy and Quality of Life (3 ch)
  PSYC 2693 Foundations in Perception and Cognition (3 ch)
  PSYC 3383 Perception (3 ch)
  PSYC 3503 Learning (3 ch)
  PSYC 3632 Motivation (3 ch)
  PSYC 3725 The Dementias (3 ch)
  PSYC 3752 Drugs and Behaviour (3 ch)
  PSYC 4021 Cognitive and Psychophysiological Processes (3 ch)
  PSYC 4111 Conducting Research Studies (3 ch)
  PSYC 3723 Introduction to Human Neuropsychology (3 ch)
  PSYC 4583 Advanced Perception (3 ch)
  PSYC 4833 Psychopharmacology (3 ch)
  PSYC 4813 Substance Use Disorders (3 ch)
  PSYC 4733 Cognitive Neuroscience (3 ch)

- *General elective courses* (please note prerequisites may apply):
  A maximum of 12 ch of general electives
  Note: Students who are interested in Medical School are advised to take PHYS 1011 Introductory Physics I (3 ch) and PHYS 1021 Experiments in Introductory Physics I (2 ch). Students interested in applying to a professional program should review the program requirements when selecting their elective courses. It is recommended that physics be taken in the first year for many professional programs. You may seek assistance from the academic advisor in making a course plan.

Honours in Biomedical Sciences Health

All the requirements of year one, two and three apply. Students wishing to complete an Honours are to replace 3 credits of required elective courses and 6 credits of general elective courses in their fourth year to meet the honours thesis requirements. Students completing an Honours will enrol in BIOL 4090 Honours Project (9 ch) or PSYC 4142 Honours Research Seminar (3 ch), PSYC 4143 Designing Research Proposals (3 ch), and PSYC 4145 Honours Thesis (3 ch).

BACHELOR OF INFORMATION SCIENCES
General Information

Note that admission to the Bachelor of Information Sciences has been suspended.

The Bachelor of Information Sciences (BISc) program is by design an interdisciplinary program involving core courses taken primarily from Business Administration, Computer Science, Economics, Mathematics and Statistics. The core subjects are particularly relevant to the collection, treatment, understanding and management of data (information) encountered in other academic disciplines as well as in business, industry, government and other areas. Emphasis is placed on the statistical methods and modern computing techniques of handling these data, the design and application o.f mathematical models, and the management of information within organizations.

This four-year degree program is offered in cooperation and in conjunction with departments in the Faculty of Science, Applied Science and Engineering, the Faculty of Business and the Faculty of Arts.

For general regulations on admission, please consult the appropriate section of the University calendar. Transfer into the BISc from another UNB degree program is not permitted if the GPA for the most recent assessment period is below 2.0. For transfer from another university, a CGPA equivalent to 2.0 at UNB is required.

UNB Saint John also offers a Bachelor of Arts with a Major in Information and Communication Studies. This interdisciplinary program explores the influences of communication technology, the media industries and information policy on society. Additional detail and program requirements can be found in this section of the Calendar under Bachelor of Arts, Information and Communication Studies.

General Regulations

It is recommended that students read the General University Regulations, Section B of the calendar, and in particular the subsection headed "Grading System and Classification."

Curriculum

The basic curriculum of the degree consists of a specified set of core courses and a set of regulations governing the choice of others. A student's program is chosen in consultation with a faculty advisor. Two specializations are offered. Years 1 and 2 are the same in all specializations. In Years 3 and 4, students must choose to follow the Decision and Systems Science Specialization, or the Decision and Business Management Specialization.

I. Required Courses
Years 1 and 2
BA 1501, BA 1216, BA 2504, CS 1073, CS 1083, CS 1303, CS 2043, INFO 1103, ECON 1013, ECON 1023, ECON 2013, ECON 2023, MATH 1003, MATH 1013, MATH 2213, STAT 1793, STAT 2793.

Years 3 and 4
Decision and Systems Science Specialization
BA 2303, CS 2113, or CS 3113, CS 2253, CS 2383, CS 3403, CS 2998, CS 3983, CS 4525, DA 4993, ECON 3665, MATH 2903, MATH 2913, MATH 3343, STAT 3083, STAT 3093, STAT 4703.

Decision and Business Management Specialization
BA 2123, BA 2217, BA 2303, BA 2858, BA 3425, BA 3623, BA 3672, ECON 3013, ECON 3023, ECON 3665, ECON 4645, MATH 2903, MATH 2913.

II. Regulations Governing Course Selection

1. At least 6 ch of courses selected from HUM 2003, HUM 1021, HUM 2021, ICS 1001, ICS 2001, ICS 3001, ICS 3005, and any ENGL course, WLIT 2503, PHIL 1053 and PHIL 2111.

Decision and Systems Science Specialization

2. At least 3 ch of courses must be chosen from upper level Computer Science, Mathematics or Statistics courses. These courses are in addition to those listed in I.
3. Three credit hours (3 ch) from either MATH 3753 or MATH 3903.
4. Three credit hours (3 ch) in upper level Statistics. These courses are in addition to those listed in I or chosen to fulfill II.2.
5. At least 3 ch selected from disciplines in Arts or Business to be approved by faculty advisor.

Decision and Business Management Specialization

6. At least 12 ch of courses selected from disciplines in Arts, Business or Science, Applied Science and Engineering to be approved by faculty advisor.
7. Twelve credit hours (12 ch) of courses selected from CS 2253, CS 2998, CS 3033, CS 3403, CS 3423, CS 4033, CS 4525 and DA 4403.

A grade of C or better is required in all required courses and all courses selected under II.1-II.7

An example of what would typically be taken by a student in the first year of the degree program follows:
BA 1501   How Business Works (1st term)
BA 1216   Accounting for Managers I (2nd term)
MATH 1003 Intro to Calculus I (1st term)
MATH 1013 Intro to Calculus II (2nd term)
CS 1073   Intro to Computer Programming I (in Java) (1st term)
CS 1083   Intro to Computer Programming II (in Java) (2nd term)
ECON 1013 Introduction to Microeconomics (1st term)
ECON 1023 Introduction to Macroeconomics (2nd term)
Plus specified Arts electives (Regulation II.1) equivalent to 2 term-courses

BACHELOR OF NURSING

Department of Nursing & Health Sciences

General Office:	K.C. Irving Hall Room 329
Mailing Address:	UNB Saint John Department of Nursing and Health Sciences, University of New Brunswick, 100 Tucker Park Road, P.O. Box 5050, Saint John, N.B., Canada, E2L 4L5
Phone:	(506) 648-5542
Fax:	(506) 648-5784
Email:	nursingsj@unbsj.ca
Website:	http://www.unb.ca/saintjohn/sase/dept/nhs/index.html

FACULTY
Chair: Hamilton, Catherine

- Banks, Angela, BN (UNB), MN (UNB), Diploma in University Teaching (UNB), CAN Certification Medical-Surgical Nursing, Instructor - 2016
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Jarislowsky Chair in Interprofessional Patient-Centred Care, Associate Professor, Director of the Centre for Research in Integrated Care - 2010
- Dupont, Diana, BN (UNB), MN (UNB), Diploma in University Teaching (UNB), Instructor – 2018
- Edwards, Rosann, BA (U of Ottawa), BSCN (U of Ottawa), MSCN (U of Ottawa), PhD (U of Ottawa), Assistant Professor - 2020
- Furlong, Karen, RN Dip (SJSN), BN (UNB), MN (UNB), PhD (UNB), Diploma University Teaching (UNB), Senior Teaching Associate – 2000
- Gregg, Emily, BN (UNB), MN (UNB), PhD (c) (Queen's University), Instructor - 2019
- Hamilton, Catherine, BSN (Duke University), Certified Nurse-Midwife, MSc (Yale University), ARNP, MSN, PhD (University of Florida), Assistant Professor – 2017
- Hatfield, Meagan, BN (UNB) MN, (Athabasca University), Diploma in University Teaching (UNB), Instructor - 2019
- Keeping-Burke, Lisa, BN (MUN), MN (MUN), PhD (McG), Associate Professor, Associate Dean of Health Research – 2012
- Manzer, Dana, RN Dip, BN (UNB), MN-PHCNP (AU), Diploma in University Teaching (UNB), PhD (UNB), Assistant Professor- 2016
- Mawhinney, Kathleen, BN (UNB), MN (UNB), Diploma in University Teaching (UNB), Senior Teaching Associate– 2010
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN (UNB), PhD (UNB), CNA Certification Gerontology, Diploma University Teaching (UNB), Professor – 2000
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA Certification Perinatal Nursing, Senior Teaching Associate – 2002
- Shamputa, Isdore Chola, BSc (UNZA), MSc, PhD (VUB), Visiting Postdoctoral Fellow (NIH), BScN (Dalhousie University), Certification in Microbiology (Canadian College of Microbiologists), Diploma in University Teaching (UNB), Assistant Professor - 2018
- Simpson, Catharine, BN (UNB), MN (Athabasca University), Diploma in University Teaching (UNB), Instructor - 2019
- Waycott, Loretta, BA (STU), BN (UNB), MN (Athabasca University), Diploma in University Teaching (UNB), Instructor - 2019

Program Goal
The goal of the Nursing Programs at UNB Saint John is to educate caring professional nurses. Faculty believe that professional nursing encompasses five interrelated areas of competency: Knowledge and its Application, Communication, Critical Thinking/Skills of Analysis, Professional Identity, and Social Justice/Effective Citizenship.

BN Program
In 1989, the membership of the Nurses' Association of New Brunswick (NANB) voted to establish a baccalaureate degree in Nursing as the entry level to the profession by the year 2000. In 1994, the Minister of Advanced Education and Labor announced the government's support of this goal by transferring the total responsibility for nursing education in New Brunswick to the universities. In the fall of 1995, the Bachelor Nursing Program at the Saint John campus of UNB admitted its first students.
The degree program spans four years of general and professional education. On completion of the program, graduates are eligible to write the National Council Licensure Examination for Registered Nurses (NCLEX-RN) to procure registration in the Province of New Brunswick. Those who are successful are eligible to obtain registration across Canada.

UNB Saint John's four-year Baccalaureate Program in Nursing includes a majority of course work in nursing, and courses from the liberal arts and sciences. Many nursing courses provide opportunities for clinical practice. Students work with individuals, families, groups and communities, and with persons at various stages of the life cycle and in a variety of settings.

Non-academic Program Requirements
- **Critical Documents** - Students must complete the annual critical documents process in order to participate in clinical. Critical documents can include but are not limited to: CPR for Health Care Provider, criminal and vulnerable sector confirmation, immunization, code of conduct, and other required medical information. All students will receive annual advising on the specific critical document requirements for their upcoming year.
- **Clinical Scheduling** - Clinical experiences most commonly occur on Thursday and Friday in the fall and winter term and Monday to Friday during Concentrated clinical (May and early June). Depending on the availability of clinical facilities and/or instructors, these time frames may change. Students can expect clinical experiences during days, evenings, nights, and weekends to meet clinical practice requirements and in accordance with the availability of clinical placements and/or instructors. The clinical coordinator will provide students with notice of clinical scheduling as soon as it is feasible.
- **Travel** - Due to a variety of clinical settings, all students will be expected to travel out of town for some clinical experiences. In some instances, overnight accommodations may be required.
- **Nursing Program Fee** - there is a required fee which covers nursing program specific resources. This fee is added automatically when a student finalizes their tuition for the academic year.

Regulations
University Regulations
Students are responsible to read carefully Section B of this Calendar, General University Regulations, and in particular the subsection headed Grading and Classification.
Transfer and mature students are particularly advised to consult Section B. Students applying for a second undergraduate degree will take Nursing courses and the required Arts and Science courses in the program, if they have not already taken them. Questions concerning the application of regulations must be made to the Registrar in writing.
Any point not covered in the following regulations will be governed by the General University Regulations.

Admission Policy on English Language Proficiency
Admission Policy on English Language Proficiency: complete four or more consecutive years of full-time education in English in a country where English is the principal language.
(http://www.unb.ca/international/prospective/adminreq/englishlanguage.html)
The language of our program is English and prospective students whose mother tongue is not English may prove English language proficiency in one of the following ways:
i. Minimum TOEFL score on a paper-based test of 600.
ii. Minimum CanTEST scores of 5.0 on reading and listening, and 4.5 on writing.
iii. A minimum of 4 years full-time study in the English language in a country where English is the principal language.
Notwithstanding the above, students must demonstrate competence in speaking, listening, reading and writing English to meet course requirements.

General Regulations
Admissions, Transfers and Progression Committee
This Department Committee has a mandate to make decisions on issues that pertain to admissions, transfers, and progression of students through the Nursing Program and to implement the Level 1 suspension investigation process as per the Unsafe Practice Policy.
Admission: Candidates who are interested in pursuing nursing education are advised to read the Document Becoming a Registered Nurse in New Brunswick: Requisite Skills and Abilities. This document describes the skills and abilities required of students to successfully progress through a nursing education program and achieve the established entry-level competencies for registered nurses in New Brunswick. The document can be found at: http://www.nanb.nb.ca/media/resource/NANB-RequisiteSkillsAbilities-E.pdf.

1. University regulations state that a student whose assessment grade point average (GPA.) falls below 2.0 will be placed on academic probation (UNB Calendar: Standing and Promotion Requirements). In addition to this regulation, a Nursing student whose assessment GPA falls below 1.7 may be required to withdraw from the program.
2. The Department of Nursing & Health Sciences has an approved departmental-grading scheme and the following grades are required in the Nursing program:
   - at least a "C" grade in all required Nursing classroom courses
   - a "credit" in all required Nursing clinical courses

- at least a "C" grade in all required non-nursing courses
- at least a "D" grade in all electives, both Nursing and non-nursing

3. A student must receive a passing grade in all required nursing and non-nursing courses in each year of the program before proceeding to the next year of the program.
4. A student who fails a clinical course may normally be allowed to repeat the course; a student who twice fails to achieve a passing grade in any Nursing clinical course will be required to withdraw from the Nursing program.
5. As outlined in the Unsafe Practice Policy, student actions that compromise patient safety and serious breaches of conduct will result in a Level 1 suspension from clinical practice. In such circumstances these students will be reviewed by the Admissions Transfers and Progression Committee.
6. Students who have serious breaches of conduct in class, lab or clinical settings will be reviewed by the Admissions Transfers and Progression Committee and the student may be required to withdraw from the Nursing Program.
7. A student must receive a "credit" in Nursing clinical courses and at least a "C" in the *Co-requisites* Nursing classroom course before proceeding to subsequent clinical courses. In instances where a Nursing classroom course and Nursing clinical course are *Co-requisites*, a failure in one results in a requirement to repeat and pass both courses.
8. A student who has been absent from Nursing clinical courses for 8 months or longer may be required to repeat and pass relevant Nursing courses as determined by the Department Admissions, Transfers, and Progression Committee.
9. A student who fails to receive a "credit" in NURS 4152 Concentrated Clinical Practice III will be required to repeat and pass relevant clinical and classroom courses under the supervision of Nursing faculty before being permitted to repeat the Concentration.
10. Students must complete the program within 6 years of enrolment.

Course Transfers
Potential courses for transfer to the BN, Programs or the LPN-Bridge Programs will be assessed at the time of admission. In addition to the standard UNB transfer credit regulations, the Department of Nursing and Health Sciences will only accept transferred nursing (NURS) courses completed within five years at time of admission. Furthermore, transferred non-nursing required courses and open electives must be completed within ten years at time of admission.

Curriculum for BN Students
Credit hour requirements for Nursing program
Degree program Minimum 130 ch.
(See Section F of the Calendar for course descriptions)
Year I
Term 1: NURS 1011 (3 ch); NURS 1032 (3 ch); BIOL 1441 (4 ch); PSYC 1003 (3 ch); Open Elective *(3 ch).
Term 2: NURS 1225 (3 ch); NURS 1235 (3 ch); BIOL 1442 (4 ch); PSYC (Elective) (3 ch); Open Elective (3 ch); NURS 1041 (4 ch)
Year II
Term 1: NURS 2157 (3 ch); NURS 2135 (3 ch); NURS 2177 (3 ch); BIOL 2831 (3 ch). NURS 2145 (3 ch)
Term 2: NURS 2063 (4 ch); NURS 2132 (3 ch); NURS 2189 (4 ch); STAT 2263 (3 ch); BIOL 2852 (3 ch).
Year III
Term 1: NURS 3064 (3 ch); NURS 3067 (5 ch); NURS 3092/HSCI 3092 (3 ch); NURS 3061/HSCI 3061 (3 ch); BIOL 3251 (3 ch).
Term 2: NURS 3709 (3 ch); NURS 3071 (3 ch); NURS 3073 (5 ch); NURS 3081 (3 ch);

Year IV
Term 1: NURS 4142 (3 ch); NURS 4211 (2 ch); NURS 4321 (3 ch); NURS 4322 (4 ch); Open Elective* (3 ch).
Term 2: NURS 4152 (12 ch).
* Only 2 of the 3 electives may be chosen from the same discipline. Please note UNIV 1003, MATH 1863, MATH 1853, HUM 1021, CHEM 1831, BIOL 1411, BIOL 1412, and HSCI 2001 are not approved electives for the BN program. BIOL 1411 and BIOL 1412 may not be used for credit towards BIOL 1441 and BIOL 1442.

LPN Bridge Program
The University of New Brunswick offers an LPN Bridge Program (Saint John campus) and an LPN Pathway (Fredericton campus). Both programs recognize the prior learning of Licensed Practical Nursing (LPN) graduates from NB based LPN programs. Both programs allow students to transition into year three of a Bachelor of Nursing (BN) Degree Program at UNB. Please note - students accepted to the LPN Bridge are connected to the Saint John campus. Students accepted to the LPN Pathway are connected to the Fredericton campus. Transfers between campuses and programs are not available at any time.
Licensed Practical Nurses (LPNs) will be able to gain access to an LPN Bridge, a cluster of required university courses that, upon successful completion, qualify them to apply for admission to the Bachelor of Nursing (BN) degree if they (1) hold current memberships in the Association of New Brunswick Practical Licensed Nurses (ANBLPN) in good standing, and (2) are a graduate of either a). Oulton College (2016 to present) or b), the 18-month or two-year NBCC Practical Nurse program. NBCC graduates of the 18-month program must be graduates from 2004 and onward and NBCC graduates from the 2-year program must be graduates from 2009 and onward. Students must have achieved a minimum grade of 75% in every course in their previous LPN program and in each of the additional courses identified, if applicable. Finally, students require successful completion of Functions and Relations MATH 112 (a) with a minimum grade of 60%. Since there are non-academic requirements associated with the next step in the admission process, namely being admitted to the BN program, students are advised to familiarize themselves with all admission requirements before applying to the Bridge Courses.
The following required courses comprise the LPN Bridge:
NURS 2011 (3 ch) - Concepts for Professional Nursing Practice
NURS 2132 (3 ch) - Pharmacology
NURS 2051 (3 ch) - Clinical Decision Making
STAT 2263 (3 ch) - Statistics for Health Sciences
BIOL 2831 (3 ch) - Pathophysiology I
PSYC 1003 (3 ch) - Introductory Psychology I
To subsequently be admitted to the BN Program, LPN Bridge applicants must meet the following requirements: (1) a minimum Grade Point Average (GPA) of 3.0 on the six successfully completed Bridge courses with no grade less than C in any one course, (2) and provide proof of current registration with the Association of New Brunswick Practical Licensed Nurses (ANBPLN) in good standing.
LPN Bridge students must apply to enter the BN program for the upcoming year following successful completion of the Bridge. Once admitted, students will join an existing BN class for the third and fourth year of the BN program. BN students who enter the program through the LPN Bridge must complete the BN program requirements within four years of starting the BN program. Successful applicants will receive an offer of admission and have 2 weeks to confirm their seat. Confirmed students should plan to be available for courses in the next Fall and Winter terms.
BN/LPN Requirements: A minimum of 81 ch comprised of 18 ch from the Bridge plus 63 ch from years 3 & 4 of the BN (Basic) curriculum.

BACHELOR OF SCIENCE

Faculty of Science, Applied Science & Engineering

General Office:	Ganong Hall, Room 231
Mailing Address:	Faculty of Science, Applied Science and Engineering, University of New Brunswick, 100 Tucker Park Road, Saint John, N.B., Canada, E2L 4L5
Phone:	(506) 648-5615
Email:	Sci-eng@unbsj.ca
Website:	http://www.unb.ca/saintjohn/sase/

FACULTY

Dean: Dr. Michael van Zyll de Jong

Department of Biological Sciences

- Backman, Philip J., BSc (Dal), MSc (UND), Sr. Teach Assoc - 2012
- Chasse, Joel, Adjunct Prof - 2007
- Chopin, Thierry B. R., BSc (Lyon), MSc (Brest), DEA (Paris), PhD (Brest), Prof & Scientific Director of the Canadian Integrated Multi-Trophic Aquaculture Network - 1989
- Crémazy, Anne, Eng. Dipl., MSc (Bordeaux), PhD (INRS), Asst Prof - 2019
- D'Aloia, Cassidy, BA Biology (Middlebury), PhD (Boston), Asst Prof – 2019
- Davies, Kimberley, BSc (Victoria), PhD (Victoria), Asst Prof - 2019
- Dowding, Barbara, BSc, MSc (MUN), Sr Teaching Assoc - 2001
- Feicht, Anton, BSc, PhD (UNB), Sr Teaching Assoc - 2001
- Frego, Katherine, BSc (Winn), MSc (Manit), PhD (Tor) Prof - 1993
- Goodwin, Clare, Adjunct Prof - 2017
- Gray, Christopher, BSc (Univ College of Wales, Bangor), MSc Zoology, PhD Chemistry (Rhodes University, South Africa), Assoc Prof – 2010
- Granger, Aaron, BSc, PhD (UNB), DUT, Instructor, 2014
- Houlahan, Jeff, BA (Carl), BSc, PhD (Ott), Prof - 2003
- Hunt, Heather, BSc, PhD (Dal), Prof and Chair - 2012
- Johnson, John, BSc, MSc, PhD (UNB), Prof Emeritus - 1989
- Kayser, Margaret, BSc, MSc, PhD (Ott), Honorary Research Assoc, Prof Emeritus - 2009
- Kieffer, James, BSc (Ott), MSc, PhD (Qu), Prof - 1996
- Kilada, Raouf, Adjunct Prof - 2017
- Lawton, Peter, Adjunct Prof - 2010
- MacDonald, Bruce A., BSc (Acad), MSc (UNB), PhD (MUN) Prof, Assoc Dean Graduate Studies - 1992
- Major, Heather, BsC (Dal), MSc (MUN), PhD (Simon Fraser), Asst Prof - 2013
- McAlpine, Donald, Adjunct Prof - 2006
- Page, Fred, Adjunct Prof - 2009
- Pavey, Scott, BSc (Colorado), MSc (Alaska), PhD (Simon Fraser), CRC and Assoc Prof - 2015
- Reid, Gregor, Adjunct Prof - 2013
- Reiman, Anthony, Visiting Research Professor - 2009
- Robinson, Shawn, Adjunct Prof - 2007
- Rochette, Rémy, BSc, PhD (Laval), Prof -2001
- Sainte-Marie, Bernard, Adjunct Prof – 2010
- Samways, Kurt, Research Associate and Canada Research Chair Parks Canada
- Sibley, Paul, Adjunct Prof – 2013
- Speers-Roesch, Ben, BSc, MSc (Guelph), PhD (UBC), Assoc Prof - 2016
- Stephenson, Robert, Adjunct Prof - 2010
- Terhune, John M., BScAgr, MSc (Guelph), Lic Scient (Aarhus), Prof Emeritus & Hon Research Prof - 2012
- Turnbull, Stephen D., BSc (Manit.), BEd, MSc, PhD (UNB), Sr Teaching Assoc (Saint John) - 1994
- Ugarte, Raul, Adjunct Prof - 2009
- Wilson, Lucy, BA (UNB), DEA, PhD (Univ.of Paris VI), Prof - 2011
- Xiao, Shaorong, Cert. In IT, MSc, PhD (C.Lancs), Sr Teaching Assoc - 2011

Department of Computer Science

- Baker, Christopher, BSc (Univ of Newcastle upon Tyne, UK), PhD (Univ of Wales, UK), Prof - 2012
- Belacel, Nabil, Adjunct Prof (Joint Appt: Faculty of CS UNBF) - 2003
- Kaser, Owen, BCSS (Acad), MS, PhD (SUNY, Stony Brook), Assoc Prof - 1993
- Lemire, Daniel, Adjunct Professor, (University of Quebec) - 2005
- Light, Janet, BEng (Madras), MEng (Bharathiar), PhD (Avinashilingam), Prof & Chair - 2012
- Mahanti, Prabhat, BSc (Calc), MSc, PhD (Indian Inst. of Technology), Prof - 2001
- Shaw, Ruth, BScDA, MScCS, PhD (UNB), Prof Emerita - 1986
- Tasse, Josee, BScCS (Montr), PhD (McG), Assoc Prof - 1997

Department of Engineering

- Christie, James S., BScE, MScE, PhD (UNB), PEng, Hon Research Prof - 1989
- Cotter, G. Terrance, BScE, MScE (UNB), PhD (Purdue), PEng, Hon Research Prof - 1972
- Gadoura, Idris, BSCE (Libya), MSCE, PhD (HUT, Finland), PEng, Teaching Prof - 2006
- Keshavarzi, Shokat, BSc (Iran), BEd(UBC, Canada), MSc (Iran), PhD (UOW, Australia), Teaching Prof - Engineering Physics, 2014
- Prasad, Ramesh C., BScE (BhU), MTech (IIT), MScE, PhD (UNB), PEng, Hon Research Prof - 1982
- Riley, Peregrine, BScE (Qu), PhD (UNB), PEng, DUT, Teaching Prof - 1986
- Roach, Dale, BScEng, PhD (UNB), PEng, DUT, Teaching Prof - 2000
- Sollows, Kenneth F., BScE, MScE, PhD (UNB), PEng, Assoc Prof - 1985
- Walton, Byron A., Eng Cert (Mt.All.), BScE (NSTC), MScE (UNB), PEng, Teaching Prof- 1975

Department of Mathematics and Statistics

- Alderson, C. Hope, BSc (UPEI), MSc, PhD (UWO), Associate Teaching Prof - 2018
- Alderson, Timothy, BSc, MSc, PhD (UWO), Prof & Chair - 2010
- Burgess, Andrea, BA, MSc (MUN), PhD (Ottawa), Assoc Prof - 2018
- Gupta, Rameshwar D., BSc, MSc (Meerut), MA, PhD (Dal), Prof Emeritus - 2010
- Hamdan, Mohammad, BSc, MSc, PhD (Windsor), Prof -1991
- Kamel, Merzik T., BSc (Assiut), MSc, PhD (Windsor), Hon Research Prof- 1981
- McKay, Rebecca, BSc (MUN), MSc, PhD (Dal), Associate Teaching Prof - 2016
- Stephenson, Matthew, BSc (Guelph), MSc (Guelph), PhD (Guelph), Asst Prof - 2020
- Stewart, Connie, BSc (UNB), MSc (Dal), PhD (Dal), Prof - 2013

Department of Psychology

- Best, Lisa, BA (York), MA (Arkansas Little Rock), PhD (Maine), Professor - 2014
- Both, Lilly, BA (Manitoba), MA (Waterloo), PhD (Waterloo), Associate Professor - 2004
- Brunelle, Caroline, BA (Laval), PhD (McGill), Professor - 2019
- Campbell, Mary Ann, BA (Dalhousie), MA (Lakehead), PhD (Dalhousie), Professor - 2015
- DiTommaso, Enrico, BA (McGill), MA (UNBF), PhD (UNBF), Professor - 2003
- McGuire, Kathy, BA (UNB), Med (UNB), MA (UNB), Teaching Professor - 2012
- Roach, Sean, BSc (Cape Breton), MSc (Dalhousie), PhD (Dalhousie), Associate Professor - 2022
- Speed, David, BA (Brock), MA (Memorial), PhD (Memorial), Associate Professor - 2022
- Wilbiks, Jonathan, HBSc (Toronto), MA (Sheffield) MA (Ryerson), PhD (Ryerson), Associate Professor - 2021

Geology

- Logan, Alan, BSc, PhD (Dunelm), Professor Emeritus - 2002

Nursing and Health Sciences

- Banks, Angela, BN (UNB), MN (UNB), Diploma in University Teaching (UNB) - Instructor - 2016
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Asst Prof - 2010
- Dupont, Diana, BN (UNB), MN (UNB), Instructor - 2018
- Edwards, Rosanne, BA (U of Ottawa), BSCN (U of Ottawa), MSCN (U of Ottawa), PhD (U of Ottawa), Asst Prof - 2020
- Furlong, Karen, RN Dip (SJSN), BN (UNB), MN (UNB), PhD (UNB), Diploma University Teaching (UNB), CNA Certification Neuroscience Nursing, Sr Teaching Assoc - 2000
- Gregg, Emily, BN (UNB) MN (UNB) PhD (c) (Queens University) Instructor - 2019
- Hamilton, Catherine, BSN Duke University, Certified Nurse-Midwife, MSc Yale University, ARNP, MSN, PhD, University of Florida, Chair and Assistant Professor – 2019
- Hatfield, Meagan BN (UNB) MN (Athabasca University) Instrcutor- 2019

- Keeping-Burke, Lisa, BN (MUN), MN (MUN), PhD (McG), Asst Prof - 2012
- Manzer, Dana, RN Dip, BN (UNB), MN-PHCNP (AU), Diploma in University Teaching (UNB), PhD, Assistant Professor - 2016
- Mawhinney, Kathleen BN (UNB), MN (UNB), Diploma in University Teaching (UNB), Instructor – 2010
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN (UNB), PhD (UNB), CNA Certification Gerontology Diploma University Teaching (UNB), Prof - 2000
- O'Brien-Larivee, Catherine, BN (UNB), MSc Applied Nursing (McG), Diploma University Teaching 2004, Sr Teaching Assoc - 2004
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA certification Perinatal Nursing, Sr. Teaching Assoc -2002
- Shamputa, Isdore Chola, BSc (UNZA), MSc, PhD (VUB), Visiting Postdoctoral Fellow (NIH), BScN (Dalhousie University), Certification in Microbiology (Canadian College of Microbiologists), Diploma in University Teaching (UNB), Assistant Professor - 2018
- Simpson, Catharine BN (UNB) MN (Athabasca University) DUT (UNB) Instructor-2019
- Waycott, Loretta BA (STU), BN (UNB), MN (Athabasca University) Instructor-2019

Students are strongly encouraged to read Section B of the Calendar for General Regulations governing the degree. General information on the BSc degree can also be found in Section G. of the Calendar.

In the Faculty of Science, Applied Science and Engineering, the minimum acceptable grade in a required course or course being used as a prerequisite is normally a grade of "C". Any student who fails to obtain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. Please see specific degree programs for further information.

Students in the degree programs of Bachelor of Science, Bachelor of Science in Computer Science, Bachelor of Information Sciences, and Bachelor of Nursing, who complete the requirements for approved minor programs at UNB, will receive recognition of the minor upon completion of the respective degree program.

Students who have completed three full years of a BSc program with the University of New Brunswick and enter a program leading to a degree in a science-based health profession at a recognized school may be granted the BSc degree. To be eligible for consideration under this policy; (1) a student must be enrolled in a professional program that includes the equivalent of at least 7 term courses in science which are recognized by the Faculty of Science, Applied Science and Engineering at UNB to be of upper level science material; (2) a student must have successfully completed at least 7 of these recognized course equivalents.

The Faculty has determined that these requirements can be satisfied by students who have successfully completed two years of Medicine, Dentistry or Veterinary Medicine, or three years of Pharmacy, or graduated from Optometry.

Students wishing to be considered for a BSc general degree who satisfy the above conditions must apply in writing, complete with official transcripts, to the Registrar.

CURRICULUM

Although similar, the first-year requirements for the various BSc options differ from one another. They are specified separately for each option. In the second and succeeding years, students will typically specialize by taking courses appropriate to one of many options that are available to them. Nine of these (Biology, Chemistry, Environmental Biology, Geology, Marine Biology, Physics, Psychology, Mathematics, and Statistics) lead naturally to specialization. Seven interdepartmental programs (Biology-Chemistry, Biology-Mathematics/Statistics, Biology-Psychology, Chemistry-Geology, Chemistry-Mathematics, Chemistry-Physics and Mathematics-Economics) are available. The remaining option, General Science, provides a variety of choices in both Science and Arts electives. Normally all Psychology courses counted toward the BSc. Psychology Major, Psychology Honours degree and the Bio-Psychology Major and Honours degree must have been completed within the 10 years prior to graduation.

NOTE: Students should NOTE that the full four years required for programs in Mathematics, Statistics, Economics, Psychology, Biology, Marine Biology, Environmental Biology, Biology-Psychology, Mathematics-Economics, Information Sciences and Computer Science may be completed on the Saint John campus and that the Marine Biology and Information Sciences programs are offered only on the Saint John campus. The full four years of a General Science option are also offered at Saint John.

Certificate Programs in Science, Applied Science and Engineering

Certificate in Community Leadership

Eligibility

- Open to BSc students at UNB Saint John who will be entering the 3rd year of their program.

- Applicants must have a CGPA of 2.7 or higher.
- Applicants must have a combination of academic success, community service and other extracurricular activities.

Admissions

- Complete and submit an application form to the Dean of Science, Applied Science and Engineering Office.
- Submit a statement outlining your interest in the program and explaining your version of the role of community leaders.
- Submit a resume detailing community service and extra-curricular activities you have been or currently are involved in.
- Submit an unofficial transcript.

To be awarded the Certificate, students admitted to the program will be required to complete a minimum of 160 hours of community service, 4 courses from a listing of applicable courses, 3 workshops, and 1 training session. All components must be completed before a student earns the Certificate designation. For continued participation in the program, students will be required to maintain a CPGA of 2.7 or higher. Enrolment in the program across Faculties will be limited to a maximum of 15 students each year.

Certificate in Data Analytics

Nowadays, massive amounts of data are available via the Internet, or they are stored in the companies' databases. The main problem faced is how to leverage such data into information useful for decision making. The main purpose of this certificate is to help build the skills necessary to tackle this problem.

This certificate is meant for students having a previous background in computer science, engineering, business, or science, or students currently in their final year of such a degree, and who are interested in upgrading their skills to be able to analyze data in their field. High School graduates with industry experience are also welcome to this program. Students with no prior background may take it as well, but they should expect to take more time to complete it, as they will have to take a significant number of prerequisite courses in addition to the core program. The certificate is composed of 3 required courses that form the basis of data analytics. The subjects covered in those required courses include: data storage into databases, SQL queries, statistical analysis through linear regression, and finally data visualization and data mining techniques so that raw data can be converted to information useful for decision making. In the 2 elective courses, the student can build further their knowledge in the area(s) of their choice, which make up the data analytics field: data acquisition and integration, data storage, data visualization, data mining, and statistics; including the current technologies used in industry.

General Regulations

1. Each person entering the program must have the approval of the Data Analytics Governance Committee (data_analytics@unb.ca)
2. Only two of the five courses listed below for the certificate may be transferred from another degree or similar program. The DA 4993 project cannot be transferred.
3. Normally a student must have grade 12 mathematics to enter the program. MATH 1863 may be taken as one of the optional courses in the certificate program by those students who do not have grade 12 mathematics from high school or feel that they are weak in the subject.
4. To earn a certificate a student must successfully complete all required courses, elective courses, and the project, with a grade of C or better.

Requirements

- 3 required courses: CS 1103, STAT 4703, and DA 4403
- 2 elective courses from: CS 2383, CS 3423, CS3773, CS 4525, CS 4783, STAT 3793, STAT 3703, STAT 4793, STAT 4043, STAT 4203, STAT 4243, DA 4803 / DA 4813 / CS 4998 / CS 4999, BA 3126
- 1 project (DA 4993), which should be an industry-related project or a research-related project, involving a large amount of data.
- **NOTE:** Students should also ensure that the *Prerequisites* courses are passed. In particular, the following courses are *Prerequisites* to the required courses above:
  1. CS 1073
  2. STAT 1793 and STAT 2793 (or one equivalent sequence: BA 1605 / BA 2606, PSYC 2901 / PSYC 3913)

Students with a prior degree in BScCS or BISc would have such *Prerequisites* covered. Students with a prior degree in business, economics, biology, psychology (except BA major in psychology, with only PSYC2901), mathematics, or statistics, would most probably have already the proper background in statistics (#2 above). Students with a prior degree in engineering (assuming STAT2593 and CS1003 already taken) would have to take STAT2793 and CS1073. Engineering students who have taken CS1023 could take CS2616 rather than CS1073 (covering CS1083 as well, which might be needed for some elective courses).

Further information may be obtained by contacting data_analytics@unb.ca.

BIOLOGY, ENVIRONMENTAL BIOLOGY, AND MARINE BIOLOGY OPTIONS

Honours and Majors Programs

Students planning on specializing in Biology, Environmental Biology or Marine Biology are requested to seek counselling from the SASE Undergraduate Advisor.

Students intending to apply to the honours program are advised to consult with their intended faculty member supervisor at the beginning of their third year. An Honours student must complete the requirements for their Major and complete BIOL 4090 (Honours Project) as one of their required upper level Biology Courses.

An Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours program but having a CGPA below 3.0 will be given a Majors degree upon graduation.

Minor Program:

The Minor in Biology is designed for students who are not Majoring in a Biology field (e.g. Environmental Biology, General Biology, Marine Biology, Biology-Psychology), but are interested in a coherent package of Biology courses. The Minor follows section V in the "University Wide Academic Regulations" of the Undergraduate Academic Calendar and consists of departmentally approved BIOL courses totaling a minimum of 24 credit hours with a grade of C or better in each. Students requiring BIOL courses for their Major are not eligible to also count these courses towards a Biology Minor. See Additional Notes below.

The Biology Minor program must consist of:

1. A minimum of 24 credit hours of biology.
2. BIOL 1105, BIOL 1205, and BIOL 1017 (unless required for their major)
3. At least one 2000 level BIOL course (e.g. BIOL 2015, 2065, 2125, 2245, 2485, 2585, or 2615). Cross-listed courses may be included (e.g. CHEM 2065).
4. A minimum of 8 credit hours of 3000-4000 level biology including at least 1 credit hour of lab credit.

Additional Notes:

- If BIOL 1105 and BIOL 1205 are required for the students' major, other lower level course options include: BIOL 1202, 1302, 1411, 1412, 1441, 1442, 2135, 2345.
- Only approved courses from the Department of Biological Sciences can count towards the Biology Minor.
- All courses for the minor must be passed with a "C" or better.

Biology, Environmental Biology, and Marine Biology Majors can specialize in Zoology. Information on the specific courses required for this specialization is available from the Department of Biology.

Biology Option

The following courses are required for all Biology, Majors and Honours students:

First Year

1. BIOL 1105, BIOL 1205, BIOL 1017.
2. CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
3. MATH 1001.
4. STAT 1793.
5. GEOL 1044 and 5 ch of PHYS.

Second Year

1. BIOL 2585, BIOL 2615, Plus three of BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485.
2. CHEM 2421.
3. STAT 2793.
4. A minimum of 9 ch in approved electives.

It is expected that students will take a minimum of 36 ch during their second year.

Third and Fourth Years

1. BIOL 3022 and 39 ch of advanced Biology courses. This can include BIOL 4090 and the two remaining second year elective Biology courses (BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485).
2. 18 ch of approved electives with at least a minimum 12 ch being from non-Biology electives.
3. A total of at least 137 ch is required for graduation.

Environmental Biology Option [Note: Admission to Environmental Biology is suspended]

All properly qualified students entering the first year of the BSc Environmental Major program will normally complete the following courses:

First Year

1. BIOL 1105, BIOL 1205, BIOL 1017, BIOL 1302.
2. CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
3. GEOL 1044.
4. ECON 1013, ECON 1023.
5. MATH 1001.
6. 5 ch of Physics

For a total of 40 ch.

Second Year

1. BIOL 2585, BIOL 2615, plus three of BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, BIOL 2485.
2. CHEM 2421 and BIOL / CHEM 3245 or CHEM 2422.
3. STAT 1793.
4. ECON 3755.

Third and Fourth Years

1. 6 ch SOCI.
2. STAT 2793.
3. BIOL 3022 and 30 ch from advanced Biology courses. This may include BIOL 4090 and the two remaining second year elective Biology courses (BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485). 16 ch must be from courses designated as having environmental content. Must also have at least 3 ch each advanced of zoology, ecology and botany courses.
4. 3 ch electives non-Biology science courses, 6 ch electives Arts or Business, 9 ch approved electives.
5. A total of at least 136 ch is required for graduation.

Marine Biology Option

All properly qualified students entering the first year of the BSc Marine Biology program will normally complete the following courses:

First Year

1. BIOL 1105, BIOL 1205, BIOL 1017, BIOL 1202.
2. CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
3. MATH 1001, STAT 1793.
4. GEOL 1044.
5. 5 ch of Physics
6. A minimum of 3 ch in approved electives, for a total of 40 ch.

Second Year

1. BIOL 2585, BIOL 2615, plus three of BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485.
2. CHEM 2421
3. STAT 2793.

It is expected that students will take a minimum of 36 ch during their second year.

Third and Fourth Years

1. BIOL 3022 and 43 ch from advanced Biology courses. This can include BIOL 4090 and the two remaining second year elective Biology courses (BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485). 30 ch must be from courses designated as having a marine content including BIOL 3165, BIOL 3755, BIOL 3875, BIOL 3955, BIOL 4645, BIOL 3776.
2. 16 ch of approved electives with at least a minimum 12 ch being from non-Biology electives.
3. A total of at least 139 ch is required for graduation.

NOTE Concerning Transfer to the Fredericton Campus

Students are strongly advised to seek academic advising from a member of the Biology Department on the Fredericton Campus prior to commencing the transfer process.

CHEMISTRY OPTION

The first year of five UNBF programs is offered on the Saint John campus: Major, Honours, Honours Co-op, Medicinal Chemistry Majors, and Medicinal Chemistry Honours. Some upper year level courses are also available. A Minor program is offered for students in other departments within and outside of the Faculty of Science, Applied Science and Engineering who are interested in a coherent package of chemistry courses.

First Year

- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
- PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022, MATH 1003, MATH 1013.
- Either BIOL 1105, BIOL 1205, BIOL 1017, and 6 ch approved electives.
- BIOL 1006 will need to be completed in Fredericton to obtain a full year Biology credit.

The minimum credit hour requirements beyond first year are:

Major: 72 ch Chemistry, 3 ch Biology, 6 ch Mathematics, 18 ch approved electives.

Honours: 76 ch Chemistry, 3 ch Biology, 6 ch Mathematics, 18 ch approved electives.

Honours Co-Op: 76 ch Chemistry, 3 ch Biology, 6 ch Mathematics, 18 ch approved electives, two work terms.

Medicinal Chemistry Major: 68 ch Chemistry, 3 ch Biology, 6 ch Mathematics, 18 ch approved electives.

Medicinal Chemistry Honours: 74 ch Chemistry, 3 ch Biology, 6 ch Mathematics, 18 approved electives.

Minor: 24 ch Chemistry above the 1000 level.
NOTE 1: See Chemistry Option Fredericton for detailed description.
NOTE 2: A minimum of 12 ch of the electives must be from the Faculty of Arts, of which 6 ch must be chosen from ENGL, PHIL 2111, PHIL 2112, PHIL 3241, PHIL 3242, PSYC 3752 or equivalents.

Second/Third/Fourth Year Courses
• CHEM 2009
• CHEM/BIOL 2065 Biochemistry
• CHEM 2416, CHEM 2421, CHEM 2422, and CHEM 2457 - Organic Chemistry
• CHEM 2605 Introduction to Spectroscopy
• CHEM/BIOL 3245 Environmental Chemistry
• CHEM 3335 Chemical Management Practices
• CHEM 3435 Biomolecules and Primary Metabolism
• CHEM 3909 Directed Studies in Chemistry
• CHEM 4435 Biologically Active Natural Products and Secondary Metabolism

GEOLOGY OPTION

The Saint John campus offers courses designed to lay the groundwork for the Geology degree, which must be completed on the Fredericton campus. Please see the Fredericton Degree Programs section for descriptions of the three Geology programs: Pass, Major and Honours. The following courses are designed for Pass, Major and Honours students:

First Year

1. GEOL 1044, GEOL 1074.
2. MATH 1003, MATH 1013.
3. CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
4. A minimum of 14 ch in approved electives, for a total of at least 40 ch.

Students are recommended to take EITHER (PHYS 1011, PHYS 1012, and PHYS 1022 for a total of 10 ch), OR (BIOL 1017, BIOL 1105, and BIOL 1205 for a total of 8 ch) as part of the 14 ch in approved electives. Note that a full year of physics is required for a later professional registration as a Geoscientist. Note also that students choosing to take the first-year BIOL courses will need to take BIOL 1006 (first term lab) in Fredericton in a later year. These courses need not to be completed in the first year of study, but it is recommended that as much as possible of this requirement be completed before transferring to the Fredericton campus.

After the first year of study, completion of ESCI 1703, Field School (7 days), is recommended. See Course Descriptions - Fredericton.

Second Year
Students should transfer to Fredericton for the second year, but if they need to stay in Saint John they should consult the Fredericton Earth Science Degree program section, and Saint John Geology faculty, for guidance.

Minor in Geology
Saint John students may earn a Minor in Geology. The minor must be approved by The Department of Biological Sciences.
A Minor consists of the first-year Geology courses (GEOL 1044, GEOL 1074), or approved equivalent Earth Sciences courses, and additional GEOL courses to a total of 24 ch, including the first-year courses. Courses from UNB Fredericton's Earth Sciences department (ESCI) may also be counted towards a Geology Minor for students graduating with a UNB Saint John degree in another field.
Students whose programs require first-year geology courses may count these courses towards their minor. The student must obtain a grade of C or better in all courses used for the minor.
The Geology Minor does not meet the requirements for professional registration in New Brunswick.

GENERAL SCIENCE OPTION
1st Year (Minimum 36 ch)
CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077; MATH 1003, MATH 1013; and PHYS 1010, PHYS 1020 plus one combination of; BIOL 1105, BIOL 1205, BIOL 1017 and PYSC 1003, PYSC 1004 or GEOL 1044, and GEOL 1074. (See **NOTE** #1)
2nd Year (Minimum 31 ch)
BIOL 1105, BIOL 1205, BIOL 1017 and PYSC 1003, PSYC 1004 or GEOL 1044, GEOL 1074; 21 ch at the second year level in two areas of concentration selected from Biology, Chemistry, Geology, Mathematics, Physics, Psychology, Statistics or Engineering.
3rd and 4th Years (Minimum 64 ch)
42 ch Upper level Biology, Chemistry, Geology, Mathematics, Physics, Psychology, Statistics or Engineering. (At least 12 ch in the two areas of concentration selected, with no more than 24 ch in one area.)
22 ch Approved electives. (At least 12 ch must be selected from Arts, Business, Computer Science, Data Analysis). Recommended electives: HUM 2121, HUM 3121, PHIL 1053, PHIL 2111, PHIL 2112, PHIL 3241, PHIL 3243
Total 135 ch minimum
NOTE 1: Both the BIOL 1105, BIOL 1205, BIOL 1017, PSYC 1003, PSYC 1004 combination and GEOL 1044, GEOL 1074 must be completed

before graduation. Course selection in the first year should be done in a manner which allows progression to the two areas of concentration planned for the upper years.
For graduation, students will be listed in three divisions as for other BSc students, but a student achieving a cumulative grade point average of 3.5 or better will graduate with distinction.
NOTE 2: The General Science options offered on the two campuses differ from one another. The regulations governing the General Science option offered at UNBF are given in Section G.
NOTE 3: Courses from other institutions will be considered for credit toward this program, pending approval by the Department of Physical Sciences. This affords the students an opportunity to participate in "study abroad" or pursue study in a topic area that is currently not available on the Saint John campus.

MATHEMATICS OPTIONS
Mathematics Major
A Minimum grade of C is required in the courses counting for credit for this program. In exceptional circumstances a grade of D may be acceptable with the approval of the Chair of the Department in courses offered through the Faculty of Arts or the Faculty of Business.
First Year (Minimum 38 ch)
a. MATH 1003, MATH 1013, MATH 1503
b. At least 18 ch in lecture courses and at least 8 ch in laboratory courses chosen from

• BIOL 1105, BIOL 1205, BIOL 1017
• CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077 (CHEM 1872 / CHEM 1877 (5 ch) can be used to replace CHEM 1072 / CHEM 1077 (5 ch).)
• GEOL 1044, GEOL 1074
• PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022.
• (APSC 1013 / APSC 1023 (10 ch) can be used to replace the full PHYS sequence (10 ch).)
It is recommended that students take at least 6 ch in PHYS courses

c. A minimum of 3 ch in approved electives.
NOTE: Geology courses include laboratory component
NOTE: It is recommended that MATH 2203 is taken in the first or second year.
Second Year (Minimum 31 ch)
MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793 plus a minimum of 15 ch of approved electives.
Third Year and Fourth Year (Minimum 60 ch)
a. MATH 3213, MATH 3713, MATH 3733, STAT 3793, STAT 4793 plus 15 ch of upper level MATH courses (excluding MATH 3633). At most two (6 ch) upper level courses from other disciplines with sufficient mathematical content can be approved for credit by the Chair of the Department as part of these 15 ch. One (3 ch) upper level STAT course may be counted as part of these 6 ch.
b. Plus 21 ch of upper level (3-4000 level) elective courses approved by the department.
c. An additional 9 ch of electives at any level.
NOTE:
At least 3 ch of Computer Science (excluding CS 1303) are required in the program.
MATH 1853 (Mathematics for Business I) cannot be taken for credit for this program.
Mathematics Minor
A student who intends to pursue a Minor in Mathematics is required to take 24 ch in Mathematics. Credit must be obtained for MATH 1003, MATH 1013 and either MATH 1503 or MATH 2213. The remaining 15 ch of the Minor must consist of Mathematics courses at the second year level, or above. A maximum of 6 ch of Statistics courses, at any level, may count towards the 15 ch. Math 3633 cannot be taken for credit towards the Minor in Mathematics.
Calculus Challenge Exam
This examination which is held in early June is open to students registered in a Calculus course at a high school that has made arrangements with the Department of Mathematics and Statistics. A fee will be charged.
Students who qualify for credit will receive a certificate entitling them to credit for and thereby exemption from Math 1003 when they register at UNBSJ. Upon the student's acceptance of the credit, the letter grade of the exam will be recorded on their transcript.

Certificate in Mathematics for Education

The Certificate in Mathematics for Education is open to all interested students, however it is primarily intended for current and future school teachers for whom mathematics is a potential teachable subject, or ones who simply wish to expand their knowledge in the field of Mathematics. This Certificate can be taken as a stand-alone program or in conjunction with a degree program, with the approval of the appropriate faculty. Candidates for admission to the Certificate must meet the University's requirements for admission to any of the faculties, or the requirements for admission as mature students.

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

The Certificate consists of 30 credit hours (10 courses) as outlined below. A grade of C or better is required in each of the courses.

Mathematics Requirement:
MATH 2633 Fundamental Principles of Elementary School Mathematics
MATH 3633 Fundamental Principles of School Mathematics
MATH 1003 Introduction to Calculus I*
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra** (or equivalent)
MATH 3093 Elementary Number Theory

Statistic Requirement:
STAT 1793 Introduction to Probability and Statistics (or equivalent)

Education Requirement:
ED 3424 Teaching Elementary School Mathematics

Additional Requirement:

1. One of Math 2203 or Math 3343;
2. Three credit hours in Mathematics, Statistics, or Computer Science, chosen in consultation with the Department of Mathematics and Statistics; BA 3623 or ECON 3665 may be accepted as substitutions.

NOTES:
* Students who do not have the *Prerequisites* for this course are required to pass MATH 1863 before enrolling in Math 1003.

MATHEMATICS AND ECONOMICS OPTION

The motivation for the program is to equip students with the necessary analytical skill to pursue a graduate degree in either Economics or Mathematics. The combination of Mathematics in their Economics courses and the rigorous techniques from Mathematics will aid students in their problem-solving skills.

First Year (Minimum 38 ch)
a. MATH 1003, MATH 1013, MATH 1503
b. At least 18 ch in lecture courses and at least 8 ch in laboratory courses chosen from:

- BIOL 1105, BIOL 1205, BIOL 1017
- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077 (CHEM 1872 / CHEM 1877 (5 ch) can be used to replace CHEM 1072 / CHEM 1077 (5 ch).)
- GEOL 1044, GEOL 1074
- PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022.
- (APSC 1013 / APSC 1023 (10 ch) can be used to replace the full PHYS sequence (10 ch).)
- It is recommended that students take at least 6 ch in PHYS courses

c. A minimum of 3 ch in approved electives.

Second Year (Minimum 31 ch)

- MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793, ECON 2013, ECON 2023 plus electives equivalent to 3 term courses (term courses are typically 3-5 ch). It is recommended that some of these electives be Computer Science courses.

Third Year and Fourth Year (Minimum 60 ch)
Economics Requirements:

- ECON 3013, ECON 3023 plus 21 ch of economics courses or approved substitutes from disciplines other than Economics (a maximum of 9 ch of substitutes are permitted; please see list of substitute options in Section XI of the Bachelor of Business Administration section of the Academic Calendar). ECON 3665 is highly recommended.

Mathematics Requirements:

- MATH 3713, MATH 3303 (or approved substitute), STAT 3793, STAT 4793
- Three chosen from: MATH 3073, MATH 3243, MATH 3503, MATH 3733, MATH 3753
- Two chosen from: STAT 3703, STAT 4043, STAT 4243, STAT 4703

Plus an additional 6 ch of electives at any level.

NOTE:
1. Students are strongly advised to take the required courses ECON 1013 / ECON 1023 in their first year.
2. At least 3 ch of Computer Science (excluding CS 1303) are required in the program.
3. MATH 1853 (Mathematics for Business I) cannot be taken for credit for this program.
4. Students who are interested in pursuing graduate work in Mathematics must take MATH 3733.
5. Credit will not be given for both STAT 4703 and ECON 4645.

MATHEMATICS AND STATISTICS OPTION
Mathematics and Statistics Major
A minimum grade of C is required in the courses counting for credit for this program. In exceptional circumstances a grade of D may be acceptable with the approval of the Chair of the Department in courses offered through the Faculty of Arts or the Faculty of Business.

Lower level requirements:

- MATH 1003, MATH 1013, MATH 1503, MATH 2203, MATH 2513, MATH 2523
- STAT 1793, STAT 2793
- CS 1003 or CS 1073 (or equivalent)
- Science requirements (26 ch):
At least 18 ch in lecture courses and at least 8 ch in laboratory courses chosen from:
  - BIOL 1105 , BIOL 1205 , BIOL 1017
  - CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077 (CHEM 1872 / 1877 (5 ch) can be used to replace CHEM 1072 / 1077 (5 ch).)
  - GEOL 1044, GEOL 1074
  - PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022. (APSC 1013 / 1023 (10 ch) can be used to replace the full PHYS sequence (10 ch).)

  NOTE: Geology courses include laboratory component

- An additional 24 ch of electives at any level.
(Note: MATH 1853 cannot be taken for credit.)

Upper level requirements:

- MATH 3213, MATH 3713, MATH 3733
- An additional 12 ch in upper level MATH courses.
(Note: MATH 3633 cannot be taken for credit.)
- STAT 3793, STAT 4793
- An additional 12 ch in upper level STAT courses.
- MATH 3414 Introduction to Numerical Methods or CS 3113 (or equivalent)
- An additional 9 ch upper level (3-4000 level) electives

PHYSICS OPTION

The first year of UNBF Physics Program is offered on the Saint John Campus. The two programs are:
1. **Honours:** This program is designed primarily for qualified students intending to pursue a postgraduate education. The Honours program requires more specialization and a greater overall course load than the Major program.
2. **Major:** The Major program allows a wider choice of courses outside the Physics Department and a somewhat reduced course load.
In addition a student may specialize in Physics or Applied Physics. The Applied Physics program may be entered by any student with a satisfactory record in either first year Science or first year Engineering. It is recommended that students in Applied Physics take, CS 1003 in the first year. The Applied Physics program is not an Engineering program and does not satisfy the requirements for a PEng qualification.
All properly qualified students entering the first year of the BSc Physics program will normally complete the following courses:
First Year

- PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022
- MATH 1003, MATH 1013
- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077
- Either BIOL 1105, BIOL 1205, BIOL 1017 and 6 ch of electives; or GEOL 1044, GEOL 1074 and 6 ch of electives

PSYCHOLOGY OPTION

General Information and Curriculum
The Psychology discipline offers Majors, Honours, Specializations, Certificates and two minors.
Course requirements common to the Majors and Honours BSc degree are as follows:

- PSYC 1003, 1004
- PSYC 2102
- PSYC 2901
- PSYC 3913 (in third or fourth year)
- PSYC 4053 (in third or fourth year)
- Fourth year seminar.

First and Second Year

- BIOL 1205, 2615
- CHEM 1041, 1046, 1072, 1077
- MATH 1001
- PSYC 1003, 1004, 2102, 2901 (or equivalent)
- 6 ch in Psychology courses.
- 12 ch from list A.
- 15 ch as electives.

Third and Fourth Year

- PSYC 3913; PSYC 4053

- 27 ch in Psychology courses.
- 12 ch from List A (6 ch must be from either the third or fourth year).
- 9 ch as electives from either the third or fourth year.

List A:
Biology,
Chemistry,
Computer Science,
Data Analysis,
Geology,
Mathematics,
Physics,
Statistics.

BSc Major Program

A student must successfully complete the equivalent of 20 full courses conforming to the above pattern and all required psychology courses must be passed with at least a C (2.0).
Normally all Psychology courses counted toward the BSc. Major in Psychology degree must have been completed within the 10 years prior to graduation.

BSc Honours Program

The Honours program in Psychology provides a broad knowledge of this field and its research methods. Students planning to pursue graduate studies in psychology are advised to consider this program.
Students may apply to the Honours program in December of their third year and can enroll in the honours program when they have completed 90 ch (30 term courses). To be eligible to apply they must have a minimum cumulative grade point average of 3.3 (B+), as well as, a cumulative grade point average of 3.6 in all psychology courses at the 2000, 3000, and 4000 level. Please note that these minimum requirements do not guarantee acceptance into the Honours program; admittance is competitive and students must obtain a Faculty member willing to supervise them. As well, space may be limited.
An additional 9 term-courses derived from a selection of 3 term-courses from each of the following 3 groups is necessary.

Group I: Biological/Cognitive Basis of Behaviour I
PSYC 2712, PSYC 2693, PSYC 3343, PSYC 3383, PSYC 3503, PSYC 3513, PSYC 3603, PSYC 3632, PSYC 3712, PSYC 3714, PSYC 3723, PSYC 3743, PSYC 3752, PSYC 4021, PSYC 4201, PSYC 4583, PSYC 4712, PSYC 4733, PSYC 4833

Group II: Social/Personality
PSYC 3035, PSYC 3201, PSYC 3265, PSYC 3263, PSYC 3293, PSYC 3401, PSYC 3412, PSYC 3416, PSYC 3453, PSYC 3461, PSYC 3695, PSYC 4266, PSYC 4267, PSYC 4293, PSYC 4463.

Group III: Clinical/Applied
PSYC 3033, PSYC 3313, PSYC 3323, PSYC 3362, PSYC 3393, PSYC 3493, PSYC 3553, PSYC 3724, PSYC 3725, PSYC 3803, PSYC 4233, PSYC 4263, PSYC 4265, PSYC 4264, PSYC 4313, PSYC

4493, PSYC 4813.

An Honours student must successfully complete an Honours Thesis (PSYC 4142, PSYC 4143 and 4145). This typically requires that a student conceive, plan, perform and report an experiment under the supervision of a Faculty advisor. Normally, the thesis research is completed during the student's final year of study.
All Psychology courses taken for the Honours degree must be passed with at least a C (2.0). Furthermore, to graduate with an Honours degree in Psychology an overall cumulative grade point average of 3.3 (B+) is necessary, as well as, a cumulative grade point average of 3.3 in all required Psychology courses. For a First Class Honours designation, a grade point average of 3.6 is required in such Psychology courses. For an Honours designation, a grade point average of 3.3 is required in such Psychology courses.

Specializations in Psychology

In addition to the BSc in Psychology, students can specialize in three areas of psychology. In addition to the required courses listed above, each specialization includes four courses that are selected as required electives.

BSc Psychology with a Specialization in Cognitive Psychology and Neuroscience

Required: PSYC 3723 Introduction to Human Neuropsychology (Prerequisite: PSYC 2712 Foundations in Neuroscience)
Three additional courses chosen from:

- PSYC 2693 Foundations in Perception and Cognition
- PSYC 3383 Perception
- PSYC 3714 Animal Communication
- PSYC 3724 Introduction to Clinical Neuropsychology
- PSYC 3725 Dementias
- PSYC 3752 Drugs and Behaviour
- PSYC 4021 Cognitive and Psychophysiological Research
- PSYC 4583 Advanced Perception
- PSYC 4733 Cognitive Neuroscience

- PSYC 4833 Psychopharmacology
- PSYC 4712 Neural Plasticity

BSc Psychology with a Specialization in Developmental Psychology

Required: PSYC 3201 Child Development
Three additional courses chosen from:

- PSYC 3293 Aging
- PSYC 3725 Dementias
- PSYC 4293 Adolescence
- PSYC 4266 Field Placement in Aging I
- PSYC 4267 Field Placement in Aging II
- PSYC 4463 Attachment and Relationships
- PSYC 4493 Developmental Psychopathology

BSc Psychology with a Specialization in Psychology and the Law

1. At least one of PSYC 3263, The Psychology of Criminal Behaviour, OR PSYC 3265, Forensic Psychology
2. Three additional courses chosen from:

- PSYC 3323 Community Psychology and Mental Health
- PSYC 3493 Changing Behaviour
- PSYC 3553 Psychopathology
- PSYC 3752 Drugs and Behaviour
- PSYC 4813 Substance Use Disorders
- PSYC 4263 Field Placement/Com.Cor I
- PSYC 4264 Field Placement/Com.Cor II
- PSYC 4265 Field Placement in Clinical Psychology

Minor in Psychology

The Minor in Psychology is an 8-term course program aimed at students wishing to acquire a basic foundation in Psychology outside of their Major area of study.
Admission to the Minor in Psychology is **not** open to students who have completed or are currently enrolled in a Major or Honours in Psychology, Bio-Psychology or a Certificate in Mental Health Studies. The minor requires a minimum of 8 term-courses. A minimum of grade of **C** is required in all courses.
NOTE: PSYC 1003 and PSYC 1004 are prerequisites for all Psychology courses.
Mandatory Psychology courses (4 term-courses)
PSYC 1003 Introductory Psychology
PSYC 1004 Introductory Psychology II
PSYC 2901 Introductory Statistics for Psychologists
PSYC 2102 Research Methods in Psychology (Prerequisites: PSYC 2901)
Required Psychology Electives (4 term-courses)
Any four (4) 3000/4000 level Psychology courses
Minor in Gerontology A Multi Disciplinary Study of Aging
Gerontology is the study of aging - the physical, cognitive, social, and emotional changes that occur to individuals over the adult years. Gerontology also examines how outside influences impact the elderly in terms of health care, pensions, housing facilities, ethics, and end- of-life legislation. This minor will help students understand the needs of an aging community by examining changes from a multidisciplinary perspective. Opportunities will also exist for experiential learning in field placements in which students will work with seniors in our community.
All 8 term courses must be passed with a C or higher. Courses cannot be counted towards both a minor and a major. **Note:** PSYC 1003 and PSYC 1004 are prerequisites for all PSYC courses at the 2000, 3000 and 4000 level; additional prerequisites are in parentheses.
5 Mandatory Term Courses:
PSYC 3293 Aging (PSYC 3201)
PSYC 3725 The Dementias
BIOL 1411 Anatomy and Physiology I - without lab (CHEM 122 and BIOL 122 - high school)
PHIL 3133 Health Care Ethics I (one term course in Phil or permission)
HSCI 2001 Introduction to Health
3 Term Courses from the following list*:
BIOL 1412 Anatomy and Physiology II - without lab (BIOL 1411)
PSYC 2693 Foundations of Perception and Cognition
PSYC 3723 Human Neuropsychology (PSYC 2712)
SOCI 2376 Sociology of Health, Illness and Healing (SOCI 1001 with a C or higher)
PHIL 3134 Health Care Ethics II (PHIL 3133)
PSYC 4266 Field Placement in Aging I (PSYC 3293 and permission of the field placement coordinator; only for completing in the gerontology minor)
PSYC 4267 Field Placement in Aging II (PSYC 3293 and permission of the field placement coordinator; only for students completing the

gerontology minor)
* or other approved courses

BIOLOGY – PSYCHOLOGY OPTION
Honours and Majors Program
This interdepartmental program offers both a major and honours. Normally all Psychology courses counted toward the BSc. Bio-Psyc Major and Honours degree must have been completed within the 10 years prior to graduation.
First Year
CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077, BIOL 1105, BIOL 1205, BIOL 1017, MATH 1001, PSYC 1003, PSYC 1004, 9 ch of approved electives (total 36 ch).
Second Year
BIOL 2015, BIOL 2065, BIOL 2615, CHEM 2421, PSYC 2102, PSYC 2901 (or equivalent), PSYC 2712, PSYC 2693, plus 5 ch of approved electives (total 33 ch).
Third and Fourth Years
BIOL 3022, BIOL 4935, PSYC 3913, PSYC 4053, plus approved electives equivalent to 54 ch (total 63 ch). The electives in years 2, 3 and 4 must contain at least 18 ch in psychology courses at the second year level or above and at least 21 ch in biology courses at the second year level or above. At least 132 approved credits are required to complete the program of which a minimum of 46 ch must be beyond the second year level.
Honours Program
To register for the honours program, students must have a cumulative grade point average of at least 3.0 at the end of the third year and must take. BIOL 4090 or PSYC 4142, 4143, and 4145. To graduate with honours, a cumulative GPA of 3.0 must be maintained at the completion of the study. Students are required to take the same program of study as required for the major program with the following exceptions. In addition to BIOL 4090 or PSYC 4142, 4143 and 4145, students must take a minimum of 21 credit hours of psychology courses at the second year level or above and at least 18 credit hours of biology courses at the second year level or above. Enrolment in BIOL 4090 or PSYC 4142, 4143, and 4145 is limited and students must arrange their thesis research supervision with an individual faculty member, preferably during their third year.

STATISTICS OPTION
Statistics Major
A Minimum grade of C is required in other courses counting toward credit for this program, in exceptional circumstances in grade of D may be acceptable with the approval of the Chair of the Department in courses offered through the Faculty of Arts or the Faculty of Business.
First Year (Minimum 38 ch)
a. MATH 1003, MATH 1013, MATH 1503
b. At least 18 ch in lecture courses and at least 8 ch in laboratory courses chosen from:

- BIOL 1105, BIOL 1205, BIOL 1017
- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077 (CHEM 1872 / CHEM 1877 (5 ch) can be used to replace CHEM 1072 / CHEM 1077 (5 ch).)
- GEOL 1044, GEOL 1074
- PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022. (APSC 1013 / APSC 1023 (10 ch) can be used to replace the full PHYS sequence (10 ch).)

c. A minimum of 3 ch in approved electives. **NOTE:** Geology courses include laboratory component
Second Year (Minimum 31 ch)

MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793, CS 1003 (or CS 1073) plus a minimum of 12 ch of approved electives.
Third Year and Fourth Year (Minimum 60 ch)
a. MATH 3713, MATH 3733, STAT 3793, STAT 4793 plus 15 ch of upper level STAT courses. An upper level MATH course (excluding MATH 3633) may contribute to these 15 ch.
b. MATH 3414 Introduction to Numerical Methods or CS 3113 (or equivalent)

c. Plus 21 ch of upper level (3-4000 level) elective courses approved by the department.
d. Plus an additional 9 ch of electives at any level.
Minor in Statistics
A student who intends to pursue a Minor in Statistics is required to take 24 ch in Statistics. A maximum of 9 ch from Mathematics may be selected. MATH 3633 cannot be taken for credit towards the Minor in Statistics. The Minor must be declared at the same time as the Major.

INTERDEPARTMENTAL PROGRAMS

There are a number of interdepartmental programs available to students interested in moving into an interdisciplinary area. Students should consult the appropriate departments for advising. In some cases, students may have to transfer to the Fredericton campus to complete the program depending on availability of courses. See Section G of this calendar for program details.

PRE-PROFESSIONAL PROGRAMS IN SCIENCE

Students intending to apply to professional schools, such as schools of Medicine, Dentistry, or Veterinary Medicine, should consult the admissions information for the individual school they intend to apply to. Students may be required to complete a specific entrance test for a particular profession, e.g. the Medical College Admission Test (MCAT) in the case of schools of medicine.
Students should select a BSc program and ensure that they complete all core requirements for the selected program. In addition, the courses indicated below are strongly recommended. Students are also strongly advised to take courses in English and the Humanities and Social Sciences. The BSc Biology-Psychology major accommodates the following course selection and is the most common "pre-med" program.
First Year

- BIOL 1105, BIOL 1205 / BIOL 1017, CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077, MATH 1003, MATH 1013, PHYS 1010 / PHYS 1020, 6 ch of English.

Second, Third and Fourth Years
Pre-Dentistry

- BIOL 2065, BIOL 2245, BIOL 2485, BIOL 3055, BIOL 3635.
- CHEM 2401, CHEM 2416, CHEM 2422, CHEM 2457.
- 12 ch Humanities and/or Social Sciences.

Pre-Medicine

- BIOL 2065, BIOL 2245, BIOL 2485, BIOL 3055, BIOL 3635.
- CHEM 2401, CHEM 2416, CHEM 2422, CHEM 2457.
- At least one Statistics course.
- Humanities and Social Sciences electives.

Pre-Veterinary Medicine

- BIOL 2015, BIOL 2485.
- CHEM 2401, CHEM 2416.
- At least one Statistics course.
- 9 ch Humanities and/or Social Sciences

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

General Office:	Sir Douglas Hazen Hall, Room 307
Mailing Address:	Department of Computer Science, University of New Brunswick, 100 Tucker Park Road, Saint John, N.B., Canada, E2L 4L5
Phone:	(506) 648-5970
Email:	dcs@unb.ca
Website:	https://www.unb.ca/saintjohn/sase/dept/cs/

FACULTY
Chair: Dr. Josee Tasse (Acting)

- Baker, Christopher, BSc (Univ of Newcastle upon Tyne UK), PhD (Univ of Wales, UK), Prof - 2008
- Belacel, Nabil, Adjunct Prof (Joint Appt: Faculty of CS UNBF) - 2002
- Kaser, Owen, BCSS (Acad), MS, PhD (SUNY, Stony Brook), Assoc Prof - 1993
- Lemire, Daniel, Adjunct Professor, (University of Quebec) - 2005
- Light, Janet, BEng (Madras), MEng (Bharathiar), PhD (Avinashilingam), Prof - 2002
- Mahanti, Prabhat, BSc (Calc.), MSc, PhD (Indian Inst. of Technology), Prof - 2001
- Shaw, Ruth, BScDA, MScCS, PhD (UNB), Prof - 1986
- Tasse, Josee, BScCS (Montr), PhD (McG), Assoc Prof & Acting Chair - 1997

General Information
The Department of Computer Science offers a four year undergraduate program accredited by the Canadian Information Processing Society (CIPS), leading to a Bachelor of Science in Computer Science (BScCS). Both honours and specializations are also offered along with the BScCS program. A set of core courses and some student selected courses (electives) comprise the requirements for the degree.

Our department also offers other related programs: Certificate programs in Computer Science and Data Analytics, as well as a CS Minor.

For general regulations on admission, please consult the appropriate section of the University calendar. Transfer into the BScCS from another UNB degree program is not permitted if the GPA for the most recent assessment period is below 2.0. For transfer from another university, a CGPA equivalent to 2.0 at UNB is required.

Regulations:
1. The total curriculum consists of a minimum of 141 credit hours.
2. A grade of C or better is required in all required core courses and all courses offered for specializations or honours.
3. It is recommended to take a minimum of 12 ch of courses having a significant writing component. This requirement is mandatory for students contemplating a transfer into the Bachelor of Computer Science program at UNB Fredericton. Normally, courses with the prefix ENGL, HIST, or POLS satisfy this requirement. Other courses may also be acceptable. It is the responsibility of the student to ensure that a particular course has a significant writing component, by discussing with the instructor before taking the course. The student should also keep a course outline and at least one writing assignment, as a proof of the significant writing component.
4. Students should consult with an advisor before taking a UNB course, online or not, offered at a different campus. For example, the course MATH 1843 (offered by the Fredericton campus) will not be granted credit.

Curriculum
The basic degree curriculum consists of a set of core requirements plus elective courses. It is expected that students will take four (4) years of study at 5 term courses per term to complete the program. The specific requirements are listed below.

Computer Science Core Requirements:
CS 1073 Intro to Computer Programming I (in Java)
CS 1083 Intro to Computer Programming II (in Java)
CS 1103 Intro to Databases
CS 1303 Discrete Structures
CS 2043 Software Engineering I
CS 2253 Machine Level Programming
CS 2263 Systems Software Development or CS 2617 C/C++ for Java Programmers
CS 2333 Computability and Formal Languages
CS 2383 Data Structures and Algorithms
CS 3403 Operating Systems
CS 3619 Programming Languages
CS 3813 Computer Architecture and Organization
CS 3913 Algorithmics
CS 3983 Professional Practice

CS 4980 Fourth Year Technical Report or CS 4982 (Technical Report) or CS 4993 (Honours Project)
(ECE 2214 and ECE 2215) Digital Logic Design and its Lab
or CS 2803 Logic Design

Computer Science Elective Requirements
On top of courses under the Computer Science Core Requirements above, the student should take 3 extra computer science courses (worth 4 ch) each as follows:

- Either CS 3893 (Computer Networking) or CS 2704 (Data Analytics using Python) or CS 3033 (Software Design and Development)
- Two more of them at the 3000 level or above
- One more of them at the 4000 level or above

Mathematics and Statistics Core Requirements:
MATH 1003 Intro to Calculus I
MATH 1013 Intro to Calculus II
MATH 2213 Linear Algebra or MATH 1503 Introduction to Linear Algebra
STAT 1793 and STAT 2793 Introduction to Probability and Statistics I and II or STAT 2593 Probability and Statistics for Engineers
NOTE: Students planning to take further courses in Statistics or take the Certificate or Specialization in Data Analytics should take STAT 1793 and STAT 2793.

Arts Writing Core Requirement:
HUM 1021 (Effective Writing I) or one course in English, Political Science, or History. (Writing courses from other disciplines in the Faculty of Arts may be approved at the discretion of the Department Chair). The requirement may also be satisfied by obtaining university credit for a Grade 12 English course taken under the International Baccalaureate or Advanced Placement systems. At the discretion of the Department Chair, the Arts Writing Core Requirement may be waived for students who have otherwise demonstrated exceptional performance in Grade 12 English, for instance by winning a "top mark in Grade 12 English" award.

Breadth Core Requirements:
Students should complete at least 27 ch of approved courses (representing approx. 9 courses) from the areas of Arts, Business Administration, Engineering, and Science. CMPE, CS, DA, MATH, STAT and SWE courses are not eligible. Similarly, courses in other fields with an excessive component from these subjects are also ineligible. Such courses include (but are not limited to) BA 3129, BA 3623, BA 3624, BA 3672, BIOL 1605, CE 2913, ECON 3613, ECON 3665, ECON 4645, ECON 4665, ECE 2412, HEAL 2002, ME 2352, PSYC 2102, and SOCI 3104. Courses from other areas, as well as selected ECE courses (Electrical Engineering courses, not Computer Engineering courses), may be taken toward this requirement with prior approval from the Department Chair. Courses excluded below under "free electives" may not be used toward the breadth core requirement.

It is strongly recommended that in order to meet this requirement, the student takes half of these courses in Science, Engineering, and/or Business, and half of these courses in Humanities and Social Sciences. At least 6 ch of these (2 courses) must be at the 2000 level or above.
NOTE that Honours students have to include Science courses, as described below.

Free Electives:
In addition to the courses taken to satisfy the core curriculum requirements, BScCS students must complete sufficient free electives to get a total of 141 ch. Students can choose combinations of electives to allow them to complete an area of specialization with the BScCS degree, to complete a Minor in another area, or simply to acquire more breadth in their studies. Students are encouraged to take one course (or more) in a newer area of computing. **NOTE** that elective credit is not granted for a course whose content has extensive overlap with other courses for which credit will be received, and elective credit is also not granted for a course that represents pre-university content. In particular, the following is a non-exhaustive list of courses for which elective credit will not be granted: BA 1605, BA 2606, CHEM 1813, CMPE 1003, CS 1003, CS 1023, CS 1063, IT 1703, IT 1713, IT 1803, IT 1813, IT 2773, MATH 1001, MATH 1853, MATH 1863, MATH 2853, MATH 2633, MATH 3633, clinical/practicum NURS courses, PSYC 2901, PSYC 3913, SCI 1001, SCI 1831, SCI 1862, SCI 1872, STAT 2263, STAT 2593, UNIV 1003, UNIV 1005, UNIV 2003. Elective credit for ED courses is limited to 9 ch. SOCS 4051 requires approval of the Department Chair. Students should contact an advisor or the Department Chair for clarification or if there are exceptional circumstances regarding free electives or breadth-core courses.

Areas of Specialization
The basic degree is obtained by satisfying the basic curriculum outlined above. In addition to the basic degree, three specializations or curriculum options are available, as described below:

1. Specialization in Data Analytics
2. Specialization in Software Engineering, and
3. Specialization in Networking

To obtain a specialized degree, students must complete all required core courses and all required courses listed in the chosen area of

specialization, and they must obtain a cumulative grade point average of 2.5 or greater.

Specialization in Data Analytics
Required Courses

- CS 2704 Data Analytics using Python
- STAT 4703 Regression Analysis
- DA 4993 Project in Data Analysis (with a project involving a large amoung of data)
- One of
  - STAT 3703 Experimental Design
  - STAT 4043 Sample Survey Theory
  - STAT 4203 Intro. Multivariate Data Analysis
  - STAT 4243 Statistical Computing
- One of
  - CS 4403 Data Mining
  - CS 4795 Artificial Intelligence
- One of
  - CS 2714 Text Analytics
  - CS 3423 Data Management
  - CS 3553 Intro to Bioinformatics
  - CS 3769 Knowledge Representation
  - CS 4525 Adv. Database Management Systems
  - CS 4553 Biomedical Informatics

Specialization in Software Engineering
Required Courses

- CS 3033 Software Design and Development
- CS 4033 Software Project Management and Quality Assurance
- CS 4083 Leading-Edge Technology in Software Development
- CS 4093 Team Software Development Project
- CS 4525 Advanced Database Management Systems

NOTE: The Specialization in Software Engineering is not an accredited engineering program and does not lead to registration as a Professional Engineer.

Specialization in Networking
Required Courses

- CS 3893 Computer Networking
- CS 4843 Wireless and Mobile Computing

In addition, at least three (3) of the following courses must be completed.

- MATH 3343 Networks and Graphs
- MATH 4704 Introduction to Coding Theory
- CS 3123 High Speed Computing
- CS 4713 Fundamentals of Simulation
- CS 4893 Network Programming
- CS 4973 or CS 4999 Independent Study/Directed Studies in Computer Science, with an approved topic.

Honours Degree Curriculum, Basic and Specialized:

Students in the BScCS degree program may elect, after their first or second year, an Honours degree program, with or without a specialization. Students who satisfy the requirements for an honours and/or specialized degree will have that designation on their final transcript. The honours degrees are designed to prepare students for graduate work.

The requirements for the basic BScCS degree must be met. Within the constraints of those basic requirements, the student must complete:

- A full-year course sequence in Science that includes labs, as part of the breadth core requirements:
  - BIOL 1105/BIOL 1205/BIOL 1017,
  - or CHEM 1041/CHEM 1046/CHEM 1072/CHEM 1077;
  - or GEOL 1044/ GEOL 1074;
  - or PHYS 1011/PHYS 1012/PHYS 1021/PHYS 1022;
  - or a Science sequence as approved by the Department.
- An extra upper-level CS elective CS 3XXX or CS 4XXX (4 ch), excluding CS 3403, CS 3619, CS 3813, CS 3913, and CS 4993
- An extra fourth year CS elective CS 4XXX, excluding CS 4993.
- One CS topics course, covering an emerging area of computer science or recent advances in one area. Such course can be one of: CS4083, CS 4123, CS4973, or CS4999. The Department Chair must approve the topic chosen.

BACHELOR OF SCIENCE IN ECONOMICS

Description of Program

The Bachelor of Science in Economics is an Undergraduate degree with an emphasis on mathematical and quantitative courses that provides an excellent entry into the workforce and background for graduate school in economics and/or finance.

A student must complete at least 120 ch (40 term courses), with a minimum of C+ grade in the required Economics courses, and a grade of

- CS 4993 with a grade of B or better, in lieu of CS 4982.

An honours degree with specialization requires that the student meet the requirements of both the honours degree and the specialization. It further requires:

- **Honours in Data Analytics:** One additional course from the Specialization's list of Statistics courses, one additional course from the Specialization's list of CS courses, and an approved course in an applied area (for example, health or environmental studies) related to the topic of the Honours Project.
- **Honours in Software Engineering:** STAT 3703.
- **Honours in Networking:** no additional courses required

A cumulative grade point average greater than or equal to 3.0 is required to achieve the honours degree. Students who satisfy the requirements for an Honours degree will receive "First Class Honours" if their CGPAs are greater than or equal to 3.5. If their CGPAs are greater than or equal to 3.0 and less than 3.5, they will receive "Second Class Honours".

Certificate in Computing

This certificate program is designed to provide individuals, especially working adults, with an opportunity to acquire the formal background necessary to become effective participants in the Information Technology industry. Since the courses taken in the Certificate are also appropriate for the BScCS, students who later decide to pursue a BScCS will normally be able to transfer their credits into that program.

Although the scheduling of courses cannot be guaranteed, it is likely that the Certificate can be completed on a part-time basis in five terms.

The Certificate is also available to students who do not meet the entrance requirements of the BScCS program; in fact, there are no specific entrance requirements except the formal approval of the Department of Computer Science. However, students who do not have Grade 12 Math will have to pass Math 1863 before they take the required CS courses.

Core Courses

- CS 1073 Intro to Computer Programming I (in Java)
- CS 1083 Intro to Computer Programming II (in Java)
- CS 1103 Introduction to Databases
- CS 1303 Discrete Structures
- CS 2043 Software Engineering I
- CS 2383 Data Structures and Algorithms
- CS 2998 Programming Project
- CS 2704 Data Analytics using Python or COMS 1002 Media, Truth, and the Social Sphere

Electives: (At least 12 ch required)
Electives may be chosen from any of the 2000-, 3000-, or 4000-level Computer Science courses.
A grade of C or better is required in all courses credited toward the Certificate.

CS Minor.

This program aims to prepare graduates from other disciplines to a career in areas of arts and business computer applications, such as in media, banking, data analyzing etc. There are potentially many rich opportunities for cooperation between the knowledge of arts and business disciplines with Computer Science for the above career.

Prerequisites
Grade 12 High School Math
Required courses

- CS 1073 Intro to Computer Programming I (in Java)
- CS 1083 Intro to Computer Programming II (in Java)
- CS 1103 Introduction to Databases
- CS 1303 Discrete Structures
- CS 2043 Software Engineering I
- CS 2253 Machine Level Programming
- CS 2383 Data Structures and Algorithms

Additional 4 ch from upper level CS courses (CS 2998 can be used to meet this requirement).
CS credits required = 32 ch min
NOTE: A grade of C or better is required in all courses credited towards the minor in CS.

C in each of the other required courses. The program components are as follows:
Required Courses:
48 credit hours, as follows: IT 1703 or IT 1803, MATH 1003, MATH 1013, MATH 1503, MATH 2513, MATH 2523, STAT 1793, STAT 3793, STAT 4793, ECON 1013, ECON 1023, ECON 2013, ECON 2023, ECON 3013, ECON 3023, ECON 4645.
Additional Requirements:

- At least 18 ch of additional courses in Economics. (ECON 3665 is recommended) or approved substitutes from disciplines other than Economics (a maximum of 6 ch of substitutes are permitted; please see list of substitute options in Section XI of the Bachelor of Business Administration section of the Academic Calendar).
- At least 9 ch of additional upper level courses in Mathematics, or acceptable substitutes from the Faculty of Science, Applied Science & Engineering.
- Additional 3 ch in Computer Science or Information Technology.

- At least 6 ch of additional upper level courses in Statistics.
- At least 21 ch of additional courses offered by the Faculty of Science, Applied Science & Engineering, or acceptable substitutes.

Electives:
At least 15 ch in Business, Computer Science, Information Technology, Data Analysis, Mathematics, Statistics, Economics, English, History, Politics and Sociology.

BACHELOR OF SCIENCE IN ENGINEERING
Department of Engineering

General Office:	K.C. Irving Hall, Room 221
Mailing Address:	Department of Engineering, University of New Brunswick, 100 Tucker Park Road, Saint John, N.B., Canada E2L 4L5
Phone:	(506) 648-5595
Email:	eng@unb.ca
Website:	http://www.unb.ca/saintjohn/sase/undergrad/engineering/

FACULTY
Chair: Idris Gadoura, PhD, PEng

- Christie, James S., BScE, MScE, PhD (UNB), PEng, Hon Research Prof - 1989
- Cotter, G. Terrance, BScE, MScE (UNB), PhD (Purdue), PEng, Hon Research Prof - 1972
- Gadoura, Idris, BScE (Libya), MScE, PhD, PEng, (HUT, Finland), Teaching Prof and Chair – 2006
- Keshavarzi, Shokat, BSc (Iran), BEd(UBC, Canada), MSc (Iran), PhD (UOW, Australia), Teaching Prof - 2014
- Prasad, Ramesh C., BScE (BhU), MTech (IIT), MScE, PhD (UNB), PEng, Hon Research Prof and Prof Emeritus - 1982
- Riley, Peregrine, BScE (Qu), PhD (UNB), PEng, Teaching Prof - 1986
- Roach, Dale, BScEng, PhD (UNB), PEng, DUT, Teaching Prof - 2000
- Sollows, Kenneth F., BScE, MScE, PhD (UNB), PEng, Assoc Prof - 1985
- Walton, Byron A., Eng Cert (Mt.All.), BScE (NSTC), MScE (UNB), PEng, Teaching Prof - 1975

The Engineering programs at UNB Saint John are based on Department course credit requirements established by the UNB Faculty of Engineering as detailed in Section G of this Calendar. The courses available at UNB Saint John will satisfy up to one-half of the total course requirements for Chemical, Civil, Computer, Electrical, Mechanical, and Software Engineering. Geological, and Geodesy and Geomatics Engineering students may obtain approximately one-quarter of their total course requirements. Elective courses should be chosen to satisfy specific Department program requirements. See Section G of this Calendar.
The total number of terms required to complete an Engineering program depends on the course load taken by the student. Students who follow approved programs, and who obtain about 80 - 85 credit hours of approved courses at UNB Saint John, will have the opportunity to complete the Bachelor's degree requirements in Chemical, Civil, Computer, Electrical, Mechanical, and Software Engineering at UNB Fredericton in two additional fall and two additional winter terms. Students in Geodesy and Geomatics Engineering or Geological Engineering will require six or more terms at UNB Fredericton in addition to the program credits they obtain at UNBSJ.
For information on the Co-op Program, Professional Experience Program (PEP) and the Diploma in Technology Management and Entrepreneurship (TME), refer to Section G of this Calendar.
First Year Program
All Engineering students at UNB take a common first term of courses. Beginning in their second term, they take a combination of required core courses, required courses in their chosen discipline and electives.
UNB Saint John students who choose Geological Engineering or Geodesy and Geomatics Engineering as their discipline complete their first year of study at UNB Saint John. They then transfer to UNB Fredericton to complete their Bachelor of Science in Engineering degree. Students who choose Chemical, Civil, Computer, Electrical, Mechanical or Software Engineering can complete their second year of study at UNB Saint John and earn the Diploma in Engineering Foundations.
Diploma in Engineering Foundations
Students can register directly for the two-year Diploma in Engineering Foundations program at UNB Saint John, or in the BSc in Engineering degree program, applying for the Diploma upon completion of its requirements. They then move to UNB Fredericton to complete the BSc degree.

Engineering and the Environment
Engineering practice and environmental concerns cannot be separated; they are fundamental to all engineering disciplines. Engineering students with a particular interest in environmental issues are encouraged to choose the discipline most closely related to their interest. The following list indicates disciplines associated with various areas of environmental concern

Chemical Engineering:	pharmaceuticals, pulp and paper, petrochemicals, food processing, specialty chemicals, advanced materials, polymers
Civil Engineering:	Hydrology, groundwater, structural design, construction, transportation, environmental geotechnics
Computer Engineering:	digital hardware, automotive and vehicle control process industries, power systems instrumentation and communication
Electrical Engineering:	Instrumentation and control, energy conversion and utilization, electromagnetic interference and compatibility
Geodesy & Geomatics Engineering:	remote sensing of the environment, mapping of land and water resources, monitoring topographic change hazard mapping, environmental information systems
Geological Engineering:	conservation and management of resources, waste disposal, environmental geotechnics
Mechanical Engineering:	alternative energy systems, recycling systems and design for recycling, energy conservation and utilization
Software Engineering:	computer software, information system, system testing and maintenance

Course Equivalencies
Please refer to the UNBF portion of the calendar for information on the General 1st Year Program (Engineering I), Biomedical Engineering and Mechatronics Engineering.
At UNB Saint John the following courses are equivalent to the same courses at UNB Fredericton and/or to the other UNB Fredericton courses listed opposite:

UNBSJ - UNBF Equivalencies

Discipline	UNBSJ	UNBF
All	GEOL 1044 (5 ch)	ESCI1001+ESCI 1026 (3+2 ch)
All	GEOL 1044+GEOL 1074 (5+5 ch)	ESCI 1001+ESCI 1026+ESCI 2022 (3+2+5 ch)
All	ME 3513 (3 ch) + CHE 2302 (4 ch)	CHE 2703 (4 ch) + CHE 2301 (3 ch)
All	ME 3513 (3 ch)	ME 3511 (3 ch)
Civil	APSC 1013 (5 ch) + APSC 1023 (5 ch)	PHYS 1081 (5 ch) + CE 1023 (4 ch)
Mechanical	APSC 1013 (5 ch) + APSC 1023 (5 ch) + APSC 2023 (3 ch)	PHYS 1081 (5 ch) + ENGG 1082 (4 ch) + ME 2003 (4 ch)
Software	APSC 1013 (5 ch) + APSC 2023 (3 ch) + APSC 2028 (2 ch)	PHYS 1081 (5 ch) + BSE (3 ch)
Chemical, Electrical, Geological, Geodesy & Geomatics	APSC 1013 (5 ch) + APSC 1023 (5 ch)	PHYS 1081 (5 ch) + ENGG 1082 (4 ch)

NOTE: Minimum grade of C is required for all prerequisite and all core and technical elective courses used for credit towards the BSc (Eng) degree.
Standard Engineering Program
Courses are arranged by priority for each major program. Most programs are designed to be completed in eight terms of study. Students electing to

spread their studies over nine or ten terms can defer low-priority courses to later terms and thus balance their workload. Students should consult their faculty advisors before selecting courses.

Co-operative Education Programs in Engineering

The UNB Faculty of Engineering seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through its constituent departments/programs, operates a Co-operative education program based on established partnerships with selected employers.

The Co-op team, reporting to the Director of Co-operative Education and the Dean of Engineering, liaises with the academic advisor in each department/program to ensure alignment between students' academic and professional experience objectives. Additional oversight is provided by the Faculty of Engineering Co-op Committee, which functions like a board of directors, and, as such, influences the Co-op program's strategies and policies. The effectiveness of the Co-op program in delivering the planned professional internship experience is closely monitored and assessed by the Co-op coordinators through interactions with the students, company personnel, and the University.

Co-operative education is available within all Engineering Programs. Work terms may be 4, 8, 12 or 16 months in duration and are generally interspersed with academic study terms. Prior to applying for Co-op jobs, students will be oriented to the process and will be assisted in preparing resumes and for job interviews.

Co-op Program Eligibility:

1. Students must be registered as full-time students in an undergraduate engineering degree program at UNB. Students on Co-op work terms retain their full-time status.
2. Students must have completed at least two full-time study terms in engineering prior to their first Co-op work term.
3. Approval to participate in the Co-op program must be received from the Co-op Office and from the student's department/program.
4. All students participating in the Co-op program must be in good academic standing. Students who have completed less than 70 credit hours must have an Assessment GPA of at least 2.7.

Co-op Work Term Requirements:

1. Students completing the first year of engineering studies will be limited to an initial summer work term of 4 months.
2. Students completing their second year of full-time engineering studies are limited to work terms of 4 or 8 months.
3. Students having successfully completed at least 100 credit hours are eligible for extended work terms of 12 or 16 months.
4. A fee is charged for each 4-month portion of a work term.
5. The final term in the student's degree program must be a full-time engineering study term at UNB.
6. When combined the total of all work terms cannot exceed 24 months.
7. The student's evaluation by the employer will be taken into consideration but the final assessment on whether or not a work term has been successful will be the responsibility of the Faculty of Engineering.
8. A Co-op designation is awarded upon graduation to those students who have successfully completed work terms that total at least 12 months.

Planning and Scheduling

1. Work terms usually commence at the beginning of January, May, and September.
2. A schedule of work and study terms is developed by each student in consultation with the Director of Undergraduate Studies or designate for the student's specific engineering program.
More information can be obtained from the Engineering Co-op office.

Diploma in Engineering Foundations
General information

UNB Saint John offers a two-year Diploma in Engineering Foundations in Chemical, Civil, Electrical, Mechanical or Software Engineering. The Diploma in Engineering Foundations provides students with a basic understanding of scientific principles, and a foundation in engineering mathematics, design, and technical communication. Students are enrolled either in the Diploma in Engineering Foundations program or in the Bachelor of Science in Engineering program at UNB Saint John, and take a common core curriculum in their first term. In the second term of their first year, they take a combination of common core courses and required discipline-specific courses in their chosen area. In their second year, students take a combination of required courses in their chosen discipline and designated complementary studies electives, basic science electives, and technical electives.

Upon the successful completion of this two-year program of study, students are awarded the diploma, and can either move to UNB Fredericton or stay at UNB Saint John to complete the BSc degree.

Alternatively, they may seek admission with advanced standing at another university to complete their undergraduate degree.

The minimum requirement for the Diploma in Engineering Foundations at UNB is the accumulation of 80 credit hours. Additional requirements for the Diploma may be found within the descriptions of individual programs below. The minimum requirement for an engineering degree at UNB is the accumulation of 160-165 credit hours. Additional requirements for the Bachelor of Science in Engineering degree are found in *Section G* of the *UNB Undergraduate Calendar*.

For information on admissions and university regulations, please consult section B of the University calendar.

Requirements

To earn the Diploma in Engineering Foundations, students must successfully complete a minimum of 80 credit hours with a minimum grade of C in required courses.

Students are responsible for ensuring that they have completed the necessary prerequisites for the required courses and required electives.

Required courses for the Diploma in Engineering Foundations (29 ch):

APSC 1013 Mechanics I (5 ch)
CHEM 1872 General Physical and Inorganic Chemistry (3 ch)
CHEM 1877 General Physical and Inorganic Chemistry Lab (2 ch)
CMPE 1003 Introduction to Computer Programming (4 ch) (*note: students in Software Engineering will instead take* CS 1073 Intro to Computer Programming I in Java) (4 ch)
ENGG 1001 Engineering Practice Series (0 ch)
ENGG 1003 Engineering Technical Communications (4 ch)
ENGG 1015 Intro to Engineering Design and Problem-Solving (2 ch)
MATH 1003 Introduction to Calculus I (3 ch)
MATH 1503 Introduction to Linear Algebra (3 ch)
MATH 1013 Introduction to Calculus II (3 ch)
Plus the specific requirements for the chosen discipline.

Chemical Engineering
General Information

Chemical Engineering is the discipline of engineering that uses physical sciences to convert raw materials into desired products and services. A chemical engineering education includes a broad background in basic sciences and mathematics and advanced knowledge in the design and operation of process equipment used to produce fuels, plastics, petrochemicals, fertilizers, electricity, pharmaceuticals, paper, et cetera. UNB Saint John's undergraduate Diploma in Engineering Foundations program in chemical engineering provides a broad background in chemistry, physics and mathematics and detailed knowledge of chemical engineering principles. Completion of the Diploma program satisfies the requirements for the first two years of the four-year Bachelor of Science in Engineering - Chemical Engineering degree at UNB. For details of the full four-year program, see Section G of the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, Chemical Engineering students take the following:

Required courses for Diploma in Engineering Foundations - Chemical Engineering (55 ch) (please note prerequisites may apply)

APSC 1023 Mechanics II (5 ch)
BIOL 1205 Biological Principles II (3 ch)
CHE 2003 Fundamentals I - Mass Balances (3 ch)
CHE 2004 Fundamentals II - Energy Balances (3 ch)
CHE 2501 General Materials Science (3 ch)
CHE 2506 Materials Science Lab (3 ch)
CHE 2012 Engineering Thermodynamics (3 ch)
CHE 2302 Transport Phenomena (4 ch)
CHE 2412 Chemical Engineering Lab (3 ch)
CHE 2525 Fundamentals of Chemical Process Design (4 ch)
CHEM 2421 Organic Chemistry I (3 ch)
ECE 1813 Electricity and Magnetism (4 ch)
MATH 2513 Multivariable Calculus for Engineers (4 ch)
MATH 3503 Differential Equations for Engineers (3 ch)
ME 3513 Fluid Mechanics (4 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

Civil Engineering
General Information

Civil Engineering deals with the systems and facilities associated with humanity's needs for shelter, work and transportation, which include bridges, highways, airports, buildings, industrial plants, dams, housing, hydro developments, water supply, sewage and sewage disposal, and marine facilities. Civil Engineers work with other professionals to ensure that civil engineering works do not adversely affect the natural environment. The Civil Engineer can be involved in various stages of a project's life cycle, including planning, design, construction, operation, or maintenance.

Through the core of the Civil Engineering undergraduate program, the student is given a firm base in all aspects of Civil Engineering including the following major areas: Structural; Geotechnical; Construction; Materials; Environmental; Hydrotechnical; and Transportation. In addition to Civil Engineering studies, undergraduates are given instruction in the

principles of Mechanical and Geomatics Engineering to enable them to deal intelligently with these branches of engineering in their work. Core courses are also provided by the Arts and Science faculties to give the students the necessary background in the Sciences, Mathematics, Humanities and Social Sciences.

UNB Saint John's undergraduate Diploma in Engineering Foundations - Civil Engineering program satisfies the requirements for the first two years of the four-year Bachelor of Science in Engineering - Civil Engineering degree at UNB. For details of the full four-year program, see Section G of the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, Civil Engineering students take the following:

Required courses for Diploma in Engineering Foundations - Civil Engineering (54 ch) *(please note prerequisites may apply)*

APSC 1023 Mechanics II (5 ch)
CE 2023 Mechanics of Materials (5 ch)
CE 2033 Structural Analysis (5 ch)
CE 2113 Soil Mechanics I (4 ch)
CE 2703 Introduction to Fluid Mechanics (4 ch)
CE 2913 Numerical Problem-Solving (4 ch)
CE 2973 Civil Engineering Design I (3 ch)
CHE 2501 General Materials Science (3 ch)
CHE 2506 Materials Science Lab (1 ch)
ECON 1013/1023 Introduction to Microeconomics/Macroeconomics (3 ch)
GEOL 1044 The Earth: Its Origin and Evolution (5 ch)
GGE 1001 Introduction to Geodesy and Geomatics (5 ch)
MATH 2513 Multivariable Calculus for Engineers (4 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

Required Non-Civil Engineering Technical Elective (3 ch) *(please note prerequisites may apply)*:
A minimum of 3 ch of required electives (one course) chosen from the following courses:

ECE 1813 Electricity and Magnetism, MATH 3503 Differential Equations for Engineers, ME 1312 Computer Aided Design

The choice of Non-Civil Engineering Technical Electives shall be subject to the approval of the Chair of the Department. Not all Technical Electives may be available in any academic year.

Electrical Engineering
Electrical engineers oversee the production, transmission and use of electricity. That includes everything from managing large power grids that deliver electricity to designing microprocessors for computers and other electric devices. The applications of Electrical Engineering are highly diversified with emphasis on the use of electrical devices to solve real-world problems. Students in this program can develop expertise in renewable energy, communications, mechatronics, networking, microelectronics, and signal processing.

The UNB Saint John undergraduate Diploma in Engineering Foundations -Electrical Engineering program satisfies the requirements for the first two years of the four-year Bachelor of Science in Engineering - Electrical Engineering degree at UNB. For details of the full four-year program, see Section G of the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, Electrical Engineering students take the following:

Required courses for Diploma in Engineering Foundations - Electrical Engineering (46 ch) *(please note prerequisites may apply)*

APSC 1023 Mechanics II (5 ch)
APSC 2023 A Survey of 19th and 20th Century Physics (3 ch)
APSC 2028 A Survey of 19th and 20th Century Physics Lab (2 ch)
CMPE 1023 Data Structures and Algorithms (4 ch)
ECE 1813 Electricity and Magnetism (4 ch)
ECE 2021 Electrical Design, Experimentation, and Measurements (2 ch)
ECE 2214 Digital Logic Design (3 ch)
ECE 2215 Digital Logic Design Laboratory (1 ch)
ECE 2711 Electric Circuits (4 ch)
ECE 2412 Simulation and Engineering Analysis (4 ch)
ECE 2722 Circuits and Systems (4 ch)
MATH 2513 Multivariable Calculus for Engineers (4 ch)
MATH 3503 Differential Equations for Engineers (3 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

Complementary Studies Elective courses (6 ch) *(please note prerequisites may apply)*:
A minimum of 6 ch of required electives (two 3 ch courses) from the Humanities, Social Sciences, or Business. Students must choose courses from two of the following areas (for a total of 6 ch):

a. Humanities and Social Sciences (HSS) related to technology and society (examples: COMS 2001).
b. Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
c. Any course from the faculties of Arts (including HSS), Business Administration, or through approval of the program coordinator. No more than 3 ch of language courses may be used for credit toward the BScE Degree.

NOTE: University Studies courses (eg. UNIV 0101) and Academic AESL courses (e.g. AESL 1011) will not be counted for credit toward the BScE degree program.

A Basic Science Elective course (3 ch) *(please note prerequisites may apply)*:
Each student is required to take one approved 3 ch basic science course chosen from Physics, Chemistry, and the life or earth sciences.

NOTE: *It is recommended that students take CHE 2501 General Materials Science.*

NOTE: Not all elective courses are offered every year.

Mechanical Engineering
The Mechanical Engineering curriculum includes a core of basic Mathematics, Science, Business and Humanities subjects, and is structured around a sequence of essential Mechanical Engineering subjects and design instruction. The central theme behind an education in Mechanical Engineering is the engineered production, transformation, conversion, transmission and control of "mechanical" energy and materials. This may involve any or all aspects of the design, manufacture, fabrication, alteration, installation, selection, specification, testing, maintenance, operation, and control of single components and machines or complete and complex systems.

UNB Saint John's undergraduate Diploma in Engineering Foundations - Mechanical Engineering program satisfies the requirements for the first two years of the four-year Bachelor of Science in Engineering - Mechanical Engineering degree at UNB. For details of the full four-year program, see Section G of the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, Mechanical Engineering students take the following:

Required courses for Diploma in Engineering Foundations - Mechanical Engineering (53 ch) *(please note prerequisites may apply)*

APSC 1023 Mechanics II (5 ch)
APSC 2023 A Survey of 19th and 20th Century Physics (3 ch)
CHE 2501 General Materials Science (3 ch)
CHE 2506 Materials Science Lab (1 ch)
ECE 1813 Electricity and Magnetism (4 ch)
ECE 2711 Electric Circuits (4 ch)
MATH 2513 Multivariable Calculus for Engineers (4 ch)
MATH 3503 Differential Equations for Engineers (3 ch)
ME 1312 Computer Aided Design (4 ch)
ME 2111 Mechanics of Materials I (3 ch)
ME 2143 Kinematics and Dynamics of Machines (3 ch)
ME 2145 Kinematics and Dynamics Design Project (1 ch)
ME 2122 Mechanics of Materials II (3 ch)
ME 2125 Mechanics of Materials Design Project (1 ch)
ME 2413 Thermodynamics I (3 ch)
ME 2415 Thermodynamics Laboratory (1 ch)
ME 3513 Fluid Mechanics (3 ch)
ME 3515 Fluid Mechanics I Laboratory (1 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

Complementary Studies Elective (3 ch) *(please note prerequisites may apply)*:
A minimum of 3 ch of required electives (one 3 ch course) from the Humanities, Social Sciences, or Business, chosen from one of the following areas:

a. Humanities and Social Sciences (HSS) related to technology and society (examples: COMS 2001).
b. Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
c. Any course from the faculties of Arts (including HSS), Business Administration, or through approval of the program coordinator. No more than 3 ch of language courses may be used for credit toward the BScE Degree.

NOTE: University Studies courses (eg. UNIV 0101) and Academic AESL courses (e.g. AESL 1011) will not be counted for credit toward the BScE degree program.

Software Engineering
Software engineers fuse the creativity of software design with the discipline of engineering principles. A relatively new field, software engineers perform a number of tasks including design, development (or construction), testing, maintenance, systems management and the adaptation of software to address regional and language differences, also known as software localization. Software engineering is a fast-growing field with employment opportunities located in almost every sector and all over the world.

UNB Saint John's Diploma in Engineering Foundations - Software Engineering program satisfies the requirements for the first two years of the four-year Bachelor of Science in Engineering - Software Engineering degree at UNB. For details of the full four-year program, see Section G of

the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, Software Engineering students take the following:

Required courses for Software Engineering (48 ch) *(please note prerequisites may apply)*
APSC 2023 A Survey of 19th and 20th Century Physics (3 ch)
APSC 2028 A Survey of 19th and 20th Century Physics Lab (2 ch)
CS 1083 Introduction to Computer Programming II (in Java) (4 ch)
CS 1103 Introduction to Databases (4 ch)
CS 2263 Systems Software Development (4 ch)
CS 1303 Discrete Structures (4 ch)
CS 2043 Software Engineering I (4 ch)
CS 2333 Computability and Formal Languages (4 ch)
CS 3113 Introduction to Numerical Methods (4 ch)
ECE 1813 Electricity and Magnetism (4 ch)
ECE 2214 Digital Logic Design (3 ch)
ECE 2215 Digital Logic Design Laboratory (1 ch)
ECE 2711 Electric Circuits (4 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

Complementary Studies Elective courses (6 ch) *(please note prerequisites may apply):*
A minimum of 6 ch of required electives (two 3 ch courses) from the Humanities, Social Sciences, or Business. Students must choose courses from two of the following areas (for a total of 6 ch):

a. Humanities and Social Sciences (HSS) related to technology and society (examples: COMS 2001).
b. Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
c. Any course from the faculties of Arts (including HSS), Business Administration, or through approval of the program coordinator. No more than 3 ch of language courses may be used for credit toward the BScE Degree.
NOTE: University Studies courses (eg. UNIV 0101) and Academic AESL courses (e.g. AESL 1011) will not be counted for credit toward the BScE degree program.

A Basic Science Elective course (3 ch) *(please note prerequisites may apply):*
Each student is required to take one approved 3 ch basic science course chosen from Physics, Chemistry, and the life or earth sciences.

NOTE: Not all elective courses are offered every year.

First Year Program in Geological Engineering or Geodesy and Geomatics Engineering
Students admitted to the Bachelor of Science in Engineering program can complete the first year of the Bachelor of Science in Engineering - Geological Engineering or Geodesy and Geomatics Engineering at UNB Saint John. They then move to UNB Fredericton to complete their degree program. For details of the full four-year programs in these disciplines, see Section G of the UNB Undergraduate Calendar.

Geological Engineering
Geological engineers merge earth sciences with engineering principles to determine what lies underground. Working primarily in the mining and mineral extraction sectors, geological engineers oversee the stability and safety of mines and of drilling sites, particularly of oil and natural gas wells.
This includes:
- stabilizing the site against landslides and other ecological disasters
- protecting groundwater supplies from contamination
- ensuring all work is conducted in an environmentally sustainable way

The first year of Geological Engineering is offered at UNB Saint John. Students then move to UNB Fredericton to complete their degree.

Geodesy and Geomatics Engineering
Geomatics is the science and technology of gathering, analyzing, interpreting, distributing and using geographic information.
Geodesy is the science of mathematically determining the size and shape of the earth and the nature of the earth's gravity field - an essential foundation for all geomatics applications.
Students use a broad range of computerized tools and information to create detailed but understandable views of the physical world and our place in it for a variety of engineering applications.
This information may come from earth orbiting satellites (like GPS and RadarSat), air and sea-borne sensors or ground-based instrumentation, and be processed using state-of-the-art statistical analysis, modelling, remote sensing or geographic information system (GIS) software.
The first year of Geomatics Engineering is offered at UNB Saint John. Students then move to UNB Fredericton to complete their degree.

SECTION F: SAINT JOHN COURSES

SECTION F: SAINT JOHN COURSES

Standard Courses Abbreviations

Aboriginal Education	ABRG
Academic ESL	AESL
Anthropology	ANTH
Applied Science	APSC
Arabic	ARAB
Archaeology	ARCH
Arts	ARTS
Astronomy	ASTR
Biology	BIOL
Bridging Year for Aboriginal Students	BY
Business Administration	ADM
Chemical Engineering	CHE
Chemistry	CHEM
Chinese	CHNS
Civil Engineering	CE
Classics and Ancient History	CLAS
Computer Engineering	CMPE
Computer Science	CS
Drama	DRAM
Economics	ECON
Education	ED
Electrical Engineering	EE
Engineering	ENGG
English	ENGL
Environment and Natural Resources	ENR
Environmental Engineering	ENVE
Environmental Studies	ENVS
Earth Sciences	ESCI
Fine Arts	FNAT
Forestry	FOR
Forest Engineering	FE
French	FR
French/Linguistics	FR/LING
Family Violence Issues	FVI
Gender and Women's Studies	GWS
Geodesy & Geomatics Engineering	GGE
Geography	GEOG
Geological Engineering	GE
German	GER
German Studies	GS
Greek	GRK
History	HIST
International Development Studies	IDS
Industrial Engineering	INDE
Japanese	JPNS
Kinesiology	KIN
Latin	LAT
Law	LAW
Law in Society	LWSO
Linguistics	LING
Mathematics	MATH
Mechanical Engineering	ME

Media Arts & Culture	MAAC
Medical Laboratory Science	MLS
Multimedia Studies	MM
Nursing	NURS
Philosophy	PHIL
Physics	PHYS
Political Science	POLS
Psychology	PSYC
Publishing	PUB
Recreation & Sports Studies	RSS
Russian & Eurasian Studies	RUSS
Sociology	SOCI
Software Engineering	SWE
Spanish	SPAN
Statistics	STAT
Technology Management & Entrepreneurship	TME

Course Numbers

Although the University is on a course credit system and has tended to move away from the idea of a rigid specification with respect to which year courses should be taken, there is some need to provide information as to the level of the course.

The various disciplines and the courses which they offer are presented in alphabetical order.

The course numbers are designated by four digits.

First Digit designates the level of the course:

1 - Introductory level course

2 - Intermediate level course which normally has *Prerequisites*.

3, 4 and 5 - Advanced level course which requires a substantial background.

6 - Postgraduate level course

Second and Third Digits designate the particular course in the Department, Division or Faculty.

Fourth Digit designates the duration of the course: 0 Year (or full) course normally offered over two terms. 1-9 Other than full year courses.

Departments may assign specific meanings to these digits; consult the departmental listings.

Codes

The following codes are used in course descriptions:

A - alternate years	R - reading course
ch or cr - credit hours	S - seminar
C - class lecture	T - tutorial
L - laboratory	[W] - English writing component
LE - limited enrolment	WS - workshop
O - occasionally given	* - bi-weekly courses
P - programming	

For example, 6 ch (3C 1T, 2C, 2T) designates a course with 6 credit hours: 3 class lecture hours and 1 tutorial hour per week in the first term; 2 class lecture hours and 2 tutorial hours per week in the second term. Combinations of class lectures, laboratories, seminars, etc., are indicated by a slash line, e.g., 5C/L/S.
Students should consult the official Web Timetable (http://es.unb.ca/apps/timetable/) to find when courses are offered in a particular year and when they are scheduled. Not all courses listed are given every year.

ABORIGINAL

ABRG1002   **Introduction to Indigenous Studies**   3 ch (3C)

A multidisciplinary approach to the history and cultures of Indigenous Peoples focusing on interactions with European newcomers and the challenges faced by First Nations within the context of colonialism - both historial and contemporary. Decolonization as it pertains to governance and territorial rights, health and community, language and education will also be examined.

APPLIED SCIENCE

APSC1013   **Mechanics I**   5 ch (3C 3L* 2T)

The fundamental concepts of vector analysis as applied to particles and rigid bodies. Forces and moments are introduced with vector algebra, followed by the application of equilibrium conditions. Free body diagrams (FBD's) are used to analyse trusses, frames and machines, as well as internal member forces (shear force and bending moment diagrams for beams). The analysis of kinematics of particle motion along straight and curved paths. Additional topics include friction, centroids, centers of gravity, and moments of inertia (area and mass). The course topics focus on visualizing concepts in mechanics and developing problem solving techniques. *Co-requisites*: MATH 1003, MATH 1503.

APSC1023   **Mechanics II**   5 ch (3C 3L* 2T)

Vector analysis and its application to the analysis of motion of particles and rigid bodies. Newton's three laws of motion. The dynamics of particle motion along straight and curved paths. Coriolis acceleration. The dynamic analysis of particles and rigid bodies executing general plane motion based on Newton's second law (F=ma), work and kinetic energy, linear and angular impulse, and linear and angular momentum. Rotation of rigid body about a fixed axis. Simple harmonic motion. *Prerequisites*: APSC 1013, MATH 1003, MATH 1503. *Co-requisite*: MATH 1013.

APSC2023   **A Survey of 19th and 20th Century Physics**   3 ch (3C)

An introduction to ideas developed in Physics over the last two centuries. Topics will be drawn from Thermodynamics, Geometric and Physical Optics, Relativity, Quantum Mechanics and Atomic Physics. *Prerequisites*: APSC 1013, MATH 1013.

APSC2028   **Survey of the 19th and 20th Century Physics Laboratory**   2 ch (3L)

A series of laboratory exercises illustrating the ideas central to the development of Physics over the last two centuries. *Co-requisites*: APSC 2023.

ARTS

Note: Students who withdraw or are required to withdraw from the Arts Co-Operative Education Program before or after they have completed ARTS 2903, ARTS 3903, and ARTS 4903 may **not** use the credit for ARTS 2903, ARTS 3903, or ARTS 4904 toward the 40 term-courses required for their BA degree.

ARTS2903   **Work Term Report 1**   1 ch

Students identify an opportunity or problem in the workplace, analyze its source and development, address key issues to be considered, offer alternatives and make recommendations including clear provisions for implementation.

ARTS3003   **Liberal Arts: Essential Skills**   3 ch

Students will reflect on the role of the liberal arts in society, the skills gained during an arts degree (e.g. communication skills, critical thinking skills), and the transferability of these skills to employment possibilities. *Prerequisite:* Restricted to students registered in the Bachelor of Arts, upon completion of at least 45 ch.

ARTS3005   **Applied Study Internship**   3 ch

This applied study course is based on a minimum 120 hour paid or volunteer internship (usually 10 hours a week over a 12 week academic term or full-time [35-40 hours week] during a summer term) at a non-profit organization, business, or other partner. In addition to having a workplace supervisor on-site, the student will have a faculty supervisor who oversees the academic component of the course, which includes a learning plan, monthly reports and a final academic project. *Prerequisite:* minimum of 30 credit hours completed and a 3.0 GPA.

ARTS3903   **Work Term Report 2**   1 ch

Students identify an opportunity or problem in the workplace, analyze its source and development, address key issues to be considered, offer alternatives and make recommendations including provisions for implementation.

ARTS4903   **Work Term Report 3**   1 ch

Students identify an opportunity or problem in the workplace, analyze its source and development, address key issues to be considered, offer alternatives and make recommendations including clear provisions for implementation.

BIOLOGY

In the four digit number description of Biology courses taught on the Saint John campus the following code applies:

1st digit specifies year in which course is normally taken.
2nd and 3rd digits designate the particular course.
4th digit designates the duration of the course as follows:
0 Course extends over both terms
1 Term course offered in first term
2 Term course offered in second term
3 Field course offered outside normal session
5 Term course offered in either first or second term
* indicates laboratory sessions are given on alternate weeks.
Prerequisites
All prerequisite courses must be passed with a minimum grade of C. BIOL 1205 or equivalent is a prerequisite for all courses in Biology except BIOL 1105, BIOL 1202, BIOL 1411, BIOL 1412, BIOL 1416, BIOL 1417, BIOL 1551, BIOL 2831 and BIOL 2852.
NOTE: See beginning of Section F for abbreviations, course numbers and coding.

BIOL1017   **Applications in Biology, Part II**   2 ch (3L)

Instruction and laboratory work dealing with the applications of Biology at the level of biological molecules, the cell and organisms. *Prerequisite*: BIOL 1105 with a C or better. *Pre- or Co-requisite:* BIOL 1205.

BIOL1105   **Biological Principles, Part I**   3 ch (3C 1.5T)

Ecology and evolution of selected plants, animals, and additional organisms. Topics include ecosystems and ecological interactions, and adaptations in the context of the organisms' environment. **NOTE**: Students intending to major in Biology must take BIOL 1017 and BIOL 1205. Credit can be obtained for only one of BIOL 1012 or BIOL 1105.

BIOL1202   **Introduction to Marine Science**   3 ch (3C)

An introduction to the physical, chemical, and biological aspects of marine environments. Marine management issues and laws will be discussed.

BIOL1205   **Biological Principles, Part II**   3 ch (3C)

Considers the chemistry of life, maintenance of cells and organisms, energy utilization, genetic information, reproductive continuity and mechanisms of evolution. This course is designed for science students or other students planning to major in Biology. Credit can be obtained for only one of BIOL 1205 or BIOL 1001. *Prerequisite:* BIOL 1105 with a C or better.

BIOL1302   **Introduction to Environmental Biology**   3 ch (3C)

Introduction to issues in environmental biology, including ecosystem health, sustainable development, environmental law, multi-stakeholder decision-making, etc. The course will use a case study method to examine local and global effects of human activity on the earth's ecology and human society, focusing on environmental concerns of coastal regions.

BIOL1411   **Anatomy & Physiology I**   3 ch (3C)

Basic concepts in human anatomy and physiology, with an emphasis on the normal condition. **NOTE**: Nursing students will not get credit for BIOL 1411. *Prerequisites:* Chemistry 122 and Biology 122.

BIOL1412   **Anatomy & Physiology II**   3 ch (3C)

A continuation of BIOL 1411, basic concepts in human anatomy and physiology, with an emphasis on the normal condition. **NOTE**: Nursing students will not get credit for BIOL 1412. *Prerequisite:* BIOL 1411 or BIOL 1441

BIOL1441   **Human Anatomy and Physiology I**   4 ch (3C 3L*)

Basic concepts in human anatomy and physiology with an emphasis on the normal condition. This course includes a selection of appropriate laboratory exercises. For Nursing students only. *Prerequisites:* CHEM 122 and BIOL 122.

BIOL1442   **Human Anatomy and Physiology II**   4 ch (3C 3L*)

Continuation of BIOL 1441, basic concepts in human anatomy and physiology with an emphasis on the normal condition. This course includes a selection of appropriate laboratory exercises. For Nursing students only. *Prerequisite:* BIOL 1441.

BIOL1605   Introduction to Geographic Information Systems   3 ch (3C)
and Applications

A general introduction to the theory, methods and applications of Geographic Information Systems (GIS). Students will learn the basics of GIS and how to acquire, display, edit, and analyze spatial data with specialized software. GIS is an interdisciplinary field, so students from all faculties may find this course useful.

BIOL2015   Introductory Genetics   4 ch (3C 3L*) [W]

History of genetics, Mendelian genetics, chromosome theory of inheritance, sex determination and linkage, extensions of Mendelian analysis, genetic linkage, crossing-over, genetic mapping, extra nuclear genetics, quantitative and population genetics. *Prerequisites*: BIOL 1205 and BIOL 1105 and BIOL 1017.

BIOL2065   Introductory Biochemistry   4 ch (3C 3L*) [W]
(Cross-Listed: CHEM 2065)

Protein structure and function, techniques for protein analysis, examples of important proteins, mechanisms and regulations of enzymatic activity, metabolism (basic concepts and design, followed by the study of a few pathways). *Prerequisites*: BIOL 1017, BIOL 1105, BIOL 1205 and CHEM 2421.

BIOL2125   Introductory Botany   5 ch (3C 3L)

Introduces botanical principles and processes. Includes basic anatomy and morphology on a range of scales: cellular structure and processes, tissues, organs, and their functions. *Prerequisites:* BIOL 1205 and BIOL 1105 and BIOL 1017.

BIOL2135   Introductory Botany for Non-Biologists   3 ch (3C 3T)

Introduces botanical principles and processes. Includes basic anatomy and morphology on a range of scales: cellular structure and processes, tissues, organs and their functions. Students are required to attend weekly laboratory/tutorial sessions, but will not write laboratory exam or assignments. This course is not equivalent to BIOL 2125 for credit toward a BSc, but serves as an acceptable prerequisite for BIOL 3275, BIOL 3353, BIOL 3355 or BIOL 3541 in place of BIOL 2125. Credit will not be granted for both BIOL 2125 and BIOL 2135. *Prerequisites:* BIOL 1205 or or Grade 12 Biology with 80% or higher and permission of the instructor.

BIOL2245   Introductory Molecular Cell Biology   4 ch (3C 3L*)

Studies cellular structure, DNA synthesis and repair, RNA synthesis, protein synthesis, gene regulation, cancer, immune response, and molecular techniques. *Prerequisites:* BIOL 1205 and BIOL 1105 and BIOL 1017.

BIOL2385   Fundamentals of Microbiology   3 ch (3C)

Introduction to the fundamental concepts of infectious disease microbiology. Discusses bacteria, fungi, viruses, protozoa, helminths and arthropods. Credit can only be obtained for one of BIOL 2485, BIOL 3251, BIOL 2385. *Prerequisites:* BIOL 1205, BIOL 1105 and BIOL 1017.

BIOL2485   Introduction to Microbiology   4 ch (3C 3L*)

This course will cover the major groups of microbes, with a focus on microbes involved in human health and disease. Bacteria, fungi, viruses, protozoa, helminths and arthropods will be discussed with emphasis on microbial metabolism, growth, structure and function; roles in medicine and industry; microbial interactions; microbial control measures; microbial diseases; and immunological responses to infection. Laboratories will stress aseptic techniques for cultivation, staining, and characterization of bacteria and experimental concepts of the discipline. *Prerequisites:* BIOL 1205, BIOL 1105 and BIOL 1017.

BIOL2585   Introductory Ecology   4 ch (3C 4L*)

Introduces concepts of ecology common to terrestrial, fresh water and marine ecosystems. Provides a basis for further ecological or environmental studies. Introduces man's influence on ecosystems. *Prerequisites:* BIOL 1105 and BIOL 1017.

BIOL2615   Introductory Zoology   5 ch (3C 3L)

Classification, functional morphology, development and evolution of the major animal groups. *Prerequisites:* BIOL 1205, BIOL 1105 and BIOL 1017; all with a grade of "C" or better.

BIOL2831   Pathophysiology   3 ch (3C)

A review of the normal physiological mechanisms for maintaining homeostasis. This is followed by a consideration of how various perturbations (such as environmental or life style factors) and disease can disrupt the normal balance and lead to pathology. For Nursing students only, or by permission of the instructor. *Prerequisites:* BIOL 1441 and BIOL 1442.

BIOL2852   Pathophysiology II   3 ch (3C)

A continuation of BIOL 2831. *Prerequisite:* BIOL 2831. For Nursing students only.

BIOL3015   Wildlife Ecotourism   3 ch

This course will introduce students to the history, concepts, principles, planning and management of wildlife tourism enterprises and how research is conducted to determine if these activities have a negative impact on the behaviour and/or physiology of the wildlife involved. *Prerequisite:* 60 ch completed.

BIOL3022   Evolution   3 ch (3C)

Traces the development of a body theory explaining the biological unity and diversity, from pre-Darwinian ideas to current issues in evolutionary biology. The course integrates theoretical, descriptive, and empirical studies to elucidate the patterns and processes of evolution (what evolution is, and how it occurs), and to explore the experimental and analytical methods biologists use to study evolution. *Prerequisites:* Completion of second year core-curriculum, including either BIOL 2015 or BIOL 2245, or permission of instructor.

BIOL3055   Animal Physiology I (A)   4 ch (3C 3L*)

A physiological approach to organismic function in animals, focusing on homeostasis and nervous, muscular, and cardiovascular systems. *Prerequisite:* BIOL 2615.

BIOL3101   Molecular and Cellular Basis of Cancer   3 ch (3C)
(Cross-Listed: HEAL 3101)

Cancer is a common disease that affects a multitude of families and health practitioners globally every day. Using cancer as a model, students will examine the molecular and cellular approach to the study of disease. Students will have the chance to explore cancer epidemiology, etiology, pathogenesis, diagnosis, and treatment from a biomedical perspective. This course will enrich students' education through an examination of the various applied methods to studying, diagnosing, and treating illness. *Prerequisites:* Two of the following: BIOL 2015, BIOL 2065, BIOL 2245, BIOL 2485, or permission of the instructor.

BIOL3132   Advanced Biochemistry   3 ch (3C)

Emphasizes the molecular underpinnings of the healthy and diseased states by extending and integrating essential molecular concepts introduced in Introductory Biochemistry, BIOL 2065. *Prerequisite:* BIOL 2065.

BIOL3140   Independent Studies   3 ch (3WS) [W]

Gives academically strong Biology Majors an opportunity to write a research report or perform a research project on a subject of interest. The student must discuss the topic with an instructor best qualified to give approval in the subject area and is able to give guidance during the year. *Prerequisite:* Completion of 60 ch and permission of instructor.

BIOL3165   Marine Ecology (A)   4 ch (3C 3L*)

An introduction to the interrelationships between organism and environment in marine ecosystems. Limited enrolment: preference will be given to Marine Biology Majors, then other students based on CGPA. *Prerequisite:* BIOL 2585.

BIOL3216   Ecophysiology, Biochemistry and Aquaculture 4 ch (3C 3L*)
of Seaweeds

Brief description of the general characteristics of seaweeds: diversity, classification/systematics and evolution. Ecology, physiology, and biochemistry of seaweeds; their environment and zonation; major physical and chemical parameters; biological parameters; human parameters. Aquaculture and uses of seaweeds in highly diversified industries, world market and trends. *Prerequisite:* BIOL 2125.

BIOL3245   Environmental Chemistry (A)   4 ch (3C 3L)
(Cross-Listed: CHEM 3245)

Course will provide students with a chemical basis for understanding the natural environment and current environmental issues. Topics will include: the composition of the natural environment, the chemistry supporting environmental processes, and the main reactions of natural & anthropogenic chemicals in the atmosphere, water, and soils. **NOTE**: This course may be listed as either BIOL 3245 or CHEM 3245. Credit cannot be obtained for both BIOL 3245 and CHEM 3245. *Prerequisite:* One term of organic chemistry at the 2nd year level.

BIOL3251   Introduction to Microbiology   3 ch (3C)

Introduction to the fundamental concepts of infectious disease microbiology. Discusses bacteria, fungi, viruses, protozoa, helminths and arthropods. For Nursing students only (or with permission of Instructor).

BIOL3275   Economic Botany (O)   4 ch (3C 3L)

Considers the range of ways in which plants are used by humans for food, medicine, shelter, etc. Discusses the impact of plants on humans and vice versa, including the possible origins and impacts of agriculture, importance of plants in various cultures, and selection of desirable plant features by humans. Students will research an area of particular interest and present a seminar on it. *Prerequisite:* BIOL 2125

BIOL3353   Flora of New Brunswick (O)   5 ch (3C 3L)

A practical taxonomy course dealing with a range of vascular plants: ferns, fern allies, gymnosperms and flowering plants; consideration of taxonomic concepts, literature and methods used to identify various groups. Laboratory emphasis will be on features of important plant families and identification of students' plant collections. *Prerequisite:* BIOL 2125.

BIOL3355   Survey of the Plant Kingdom (O)   5 ch (3C 3L)

Explores diversity in form, structure and function in major plant groups, and how these organisms live and reproduce in their particular environments. Probable homologies and evolutionary relationships are discussed. *Prerequisite:* BIOL 2125.

BIOL3362   Current Topics in Aquaculture   3 ch (3C)

This course will explore topics of special interest to aquaculturists at an advanced level. The title of the topic will be specified by the Department. The title of the topic will appear on the student's transcript. Open only to students in third year and above. *Prerequisites:* Permission of the Instructor.

BIOL3363   Special Topics in Biology   3 ch (3C)

This course will explore topics of special interest at an advanced level. Topics will be specified by the Department. Title of topic will appear on the student transcripts. Open only to students in third year and above. *Prerequisite:* Permission of the Instructor.

BIOL3364   Special Topics in Biology   4 ch (3C 3L)

This course will explore topics of special interest at an advanced level. Topics will be specified by the Department. Title of topic will appear on the student transcripts. Open only to students in third year and above. *Prerequisite:* Permission of the Instructor.

BIOL3385   Advanced Microbiology   5 ch (3C 3L)

This course is an in-depth introduction into original research and experiential learning. Students will design and implement a research project involving isolation of microbes, molecular identification of cultures, fermentation and extraction of biologically active compounds. Compounds will be assessed through bioassay-directed fractionation and biological activity determined through quantitative procedures. This course will include: experimental design, acquisition of new laboratory skills, statistical analysis and scientific writing. *Prerequisites:* BIOL 2485 and CHEM 2422.

BIOL3435   Biomolecules and Primary Metabolism (A)   3 ch (3C)
            (Cross-Listed: CHEM 3435)

This course will examine the chemistry, function, biosynthesis and metabolism of primary metabolites. Classes of compounds covered will include carbohydrates, fatty acids, amino acids, peptides, proteins and nucleic acids. **NOTE**: This course may be listed as either BIOL 3435 or CHEM 3435. Credit cannot be obtained for both BIOL 3435 and CHEM 3435. *Prerequisites:* CHEM 2422 and BIOL 2065.

BIOL3522   Movement Ecology   3 ch (3C)

Individuals move for many reasons throughout their life cycle, e.g. to search for a good place to live, to escape predation, to gain access to food, or to find a mate. This course will cover the patterns, causes, and consequences of different types of movement, with an emphasis on dispersal migration. We will consider questions such as: is selection for movement strategies different across different environments? What role will movement play in an increasingly fragmented and changing world? Reading and discussing primary literature will be a key component of this course. *Prerequisites:* BIOL 2585 and at least one university-level statistics course, or permission from instructor.

BIOL3541   Plant Ecology (O)   5 ch (3C 3L)

A course on the factors affecting the distribution and abundance of plants, how patterns and structure at the levels of populations and communities can be described quantitatively, and how these arise from the interaction of abiotic (climate, fire, soil) and biotic (competition, herbivory) factors. *Prerequisites:* BIOL 2125 and BIOL 2585.

BIOL3553 Introduction to Bioinformatics (Cross-Listed: CS3553) 4 ch (3C)

Even before the completion of the Human Genome Sequencing Project biomedical databases have stored massive amounts of DNA and protein sequence information that have been analysed and reused in biomedical studies. Today the underlying technologies and analytical tools supporting genomic data analysis make up the field known as Bioinformatics. This course will introduce core topics and tools in genomics and bioinformatics explained from a practical perspective. Students taking this course will receive hands-on training in many of the following areas of study: Genome Sequencing techniques, Gene Prediction, Sequence Alignment, Sequence Databases, Genome and Protein Structure Annotation, Bioinformatics Visualization Techniques, Gene Ontology, Analysis of Scientific Literature, Biomedical Text Mining, Workflow Management Systems, Bioinformatics Web Services. *Prerequisite:* 60 credit hours completed in a BSc (Biology, Marine Biology, Environmental Biology, or Biology-Psychology) or in a BScCS or permission of the instructor.

BIOL3565   Conservation Biology (A)   4 ch (2C 3L)

Emphasizes the management of environmental and ecological resources in such a way as to maintain ecosystem resources for the protection of species. Focus will be on methods of determining population habitat requirements, community interactions, impacts of habitat change, cumulative effects of environmental pressures, etc. in coastal systems. Issues such as biodiversity, habitat protection, endangered species protection, politics of conservation, etc. will also be discussed. *Prerequisite:* BIOL 2585.

BIOL3625   Structure and Functions of Marine Invertebrates 5 ch (3C 3L)

Explores the structure and functions of major marine invertebrate phyla, emphasizing comparative and organismic approaches, respectively. Topics covered include food capture and digestion, defense mechanisms, respiration, circulation, excretion, skeletal support, reproduction and life cycles, as well as locomotion. *Prerequisite:* BIOL 2615.

BIOL3635   Animal Physiology II (A)   4 ch (2C 4L)

A physiological approach to organismic function in animals, focusing on endocrine and temperature effects on homeostasis; osmoregulation; and the respiratory and urinary systems. *Prerequisite:* BIOL 3055.

BIOL3652   Sci and Mgmt of Marine Fisheries   4 ch (3C 3L*)

This course aims to give students an understanding of the science supporting the management of marine fisheries. Topics include the history of fisheries and fisheries science, ocean production, structure and dynamics of exploited populations, life history analysis, fisheries data and models, stock assessment, environmental and sociall impacts, and fisheries management. Topics will be covered through lecture, computer-based lab exercises and a critical literature review exercise. *Prerequisite:* BIOL 2585 and BIOL 2615, or with permission from instructor.

BIOL3665   Introduction to Environmental Law (A)   3 ch (3C)
This course will provide a general overview of the different concepts that surround environmental law. Recent events have focused our attention on the fragility of the environment, and there is evidence of its deterioration in the forms of harmful pollution, resource depletion, thinning of the earth's ozone layer, global warming, ground water contamination and the decline or even extinction of species. We will look at the legislation, the common law, and the different remedies they provide in cases of environmental crisis. *Prerequisites:* a minimum of 60 ch.

BIOL3714   Animal Communication   3 ch (3C)
            (Cross-Listed: PSYC 3714)

An overview of animal communication and its biological significance, with emphasis on vocal communication. The course will discuss various systems of communication in terms of production, perception, and the conveyance of vital information, with reference and comparison to human communication where applicable. The ways in which communication systems are shaped by - and in some cases contribute to - evolutionary processes will also be discussed. *Prerequisites:* PSYC 1003 and PSYC 1004 or BIOL 1105 and BIOL 1205.

BIOL3715   Biology of Vertebrates   5 ch (3C 3L)

A comparative account, principally of the physiology and functional anatomy of the higher vertebrates. *Prerequisite:* BIOL 2615.

BIOL3755   Fish Biology (A)   5 ch (3C 3L)

A study of the anatomy, physiology, and classification of recent fishes. In classification and geographical distribution, emphasis is placed on the marine northwest Atlantic fishes and freshwater fishes of New Brunswick. Limited enrolment: preference will be given to Marine Biology Majors, then other students based on CGPA. *Prerequisite:* BIOL 2615.

BIOL3776   Physiology and Marine Vertebrates (A)   4 ch (3C 3L*)

A course about the patterns and processes of physiological adaptation to the marine environment among vertebrates. Emphasis will be placed on diving physiology, respiratory physiology and coping with environmental hypoxia; osmoregulation physiology and coping with excess salt;

SECTION F: SAINT JOHN COURSES

consequences of heat exchange in cold and hot marine habitats; and the challenges of living in the deep-sea. *Prerequisite:* BIOL 3055.

BIOL3825   **Applied Field Ecology**   **5 ch (3C 3L) (LE)**

Applied ecology uses fundamental principles of ecological theory to help solve some of the most important environmental problems facing the world today. This course will examine natural processes involved in maintaining ecosystems and how they are applied to solve ecological issues. This course will include an intensive 5-day series of field activities in Fundy National Park, starting the week before the Fall Term. **NOTE**: Limited Enrolment. Preference will be given to Applied Coastal Ecology Majors. *Prerequisite:* BIOL 2585 and permission from the instructor.

BIOL3853   **Introduction to Pathophysiology**   **3 ch (3C)**

This introductory course aims to provide students with a basic understanding of pathophysiology. Topics include the mechanisms of inflammation and cellular injury, and the pathophysiology of the digestive, circulatory, respiratory and endocrine systems. Note: students cannot receive credit for BIOL 3853 and BIOL 2852, or BIOL 3853 and BIOL 2831. *Prerequisites*: BIOL 1411 (or BIOL 1441) and BIOL 1412 (or BIOL 1442) with a C or better, or with permission from the instructor. For non-nursing students only.

BIOL3875   **Tropical Marine Biology**   **5 ch (3C 3L)**

Students will be studying the behaviour and ecology of tropical marine flora and fauna in Bimini, Bahamas. The emphasis will be on marine vertebrate species and their surrounding environment. The impact of tourism on this flora and fauna will also be a focus of this course. *Prerequisites*: BIOL 2615 and minimum of 60 ch completed.

BIOL3903   **Diversity and Habitats of Marine Organisms**   **5 ch (3C 3L)**

This course introduces students to the diversity and systematics of marine organisms in the Bay of Fundy, including major taxonomic divisions of mammals, fish, algae, and invertebrates. The course emphasizes variation in assemblages of organisms inhabiting different types of habitats, such as estuaries, marine benthos and pelages, as well as rocky and soft-sediment intertidal shores. Students will be exposed to this diversity by learning about a number of methods commonly used to sample and quantify the abundance of marine organisms, such as transects and quadrats, mark-recapture experiments, beach seine, minnow traps, dip nets, bottom trawls, gillnets as well as shipboard techniques. **NOTE**: This course is offered exclusively in the Marine Semester. *Prerequisites*: at least one university level introductory course in each of ecology and zoology with a grade of "C" or better.

BIOL3913   **Adaptations of Marine Organisms**   **5 ch (3C 3L)**

This course introduces students to a myriad of adaptations of marine organisms living in the Bay of Fundy. Topics covered will vary from year to year. Students will learn about major ecological factors affecting the distribution and abundance of marine organisms, and they will study select biochemical, physiological, morphological, and behavioural and life-history adaptations displayed by these organisms in response to these selective agents. Students will also investigate variation of these adaptive traits in relation to temporal and spatial variability in the characteristics of marine habitats. This knowledge will largely be acquired through short-term lab and field observations and exercises, which will be supported by lectures, directed readings and group discussions. Many exercises will rely on the scientific approach to test competing hypotheses pertaining to the functional significance of selected features displayed by marine organisms. **NOTE**: This course is offered exclusively in the Marine Semester. *Prerequisites*: at least one university level introductory course in each of ecology and zoology with a grade of "C" or better.

BIOL3922   **History and Development of Aquaculture**   **3 ch (3C)**

This course reviews the history and evolution of aquaculture practices. Topics covered will vary from year to year, but may include: seaweed, aquatic plant, invertebrate and fish species being cultivated in the world; site and practice selection and management; different types of aquaculture systems and their sustainability; monoculture; integrated multi-trophic aquaculture; offshore aquaculture; land-based aquaculture; aquaculture and environment impacts: what is acceptable; aquaculture and ecosystem services (nutrient bio mitigation, oxygen provision, carbon sequestration, reduction of ocean acidification); assimilative capacity and resilience of ecosystems; aquaculture and climate change; aquaculture and harmful algal blooms; veterinarian approach to aquaculture; societal, economic and regulatory aspects of aquaculture; aquaculture in the broader integrated coastal zone management perspective; organism health and healthy products; differentiation and diversification of products; food production systems; world markets and consumer trends; business models and the integrated sequential bio refinery concept; development of responsible aquanomy. Some components of the course will be delivered by experts from Fisheries and Oceans Canada, the Canadian Food Inspection Agency, the New Brunswick Department of Agriculture, Aquaculture and Fisheries, other academic institutions, the aquaculture

industry, aquaculture professional associations, feed companies, and consultants. *Prerequisite:* 60 ch completed or permission of instructor.

BIOL3923   **History and Development of Marine Aquaculture**   **2 ch (3C)**

This course reviews the history and evolution of marine aquaculture practices. Topics covered will vary from year to year, but may include: plant and animal species being cultivated in the world; different types of aquaculture systems and their sustainability; site and practice selection and management; aquaculture and environment impacts: what is acceptable; assimilative capacity and resilience of ecosystems; social, economic and regulatory aspects of aquaculture; aquaculture in broader integrated coastal zone management perspective; integrated multitrophic aquaculture and offshore aquaculture; differentiation and diversification of products, world markets and consumer trends. To connect the theory in the classroom to the experience in the field, visits of hatcheries, aquaculture sites, as well as processing and manufacturing facilities will be conducted. Different components of the course will be delivered by experts from the Department of Fisheries and Oceans, the Canadian Food Inspection Agency, the New Brunswick Department of Agriculture and Aquaculture, aquaculture professional associations, the aquaculture industry, feed companies and consultants. **NOTE**: This course is offered exclusively in the Marine Semester, and has no *Prerequisites*.

BIOL3933   **Directed Studies in Marine Sciences**   **5 ch (3C 3L)**

This course teaches students the fundamentals of the scientific method, and gives them the opportunity to conduct a small research project in marine sciences under the supervision and guidance from practicing scientists. Topics covered include: hypotheses and predictions; experimental and comparative approaches; variation, replication, pseudo-replication and sampling; calibration, accuracy and precision; experimental designs and their relation to statistics; scientific writing. Students will first work through a small question with instructors to put into practice concepts discussed in class, and they will then work on their own project throughout the better part of the semester to further hone their research skills. Students will choose the topic of their project and establish its design in consultation with instructors and via group discussions with classmates. Projects will be designed to take advantage of local marine organisms and habitats. Students will collect, analyze, interpret and write-up their results following the format of a scientific paper, and they will present them to the class at the end of the semester. **NOTE**: This course is offered exclusively in the Marine Semester. *Prerequisites:* at least one university level introductory course in each of statistics, ecology and zoology, all with a grade of "C" or better.

BIOL3943   **Current Topics in Marine Sciences**   **3 ch (3C)**

This is a seminar course to acquaint students with some topical issues and recent developments in marine sciences, and provide them with an opportunity to critically evaluate and discuss scientific work. The course will consist of research seminars given by university and government scientists, as well as assigned readings and group discussions that will be associated with each presentation. Topics and guest speakers will vary from year to year, but all seminars will be based on marine organisms, habitats, and/or topical issues, both theoretical and practical. **NOTE**: This course is offered exclusively in the Marine Semester. *Prerequisites:* at least one university level introductory course in each of statistics, ecology and zoology, all with a grade of "C" or better.

BIOL3953   **Functional Ecology of Coastal Fishes**   **4 ch (1C 3L)**

This course is a field-based investigation into the diversity, ecology, and physiology of fishes living in coastal habitats of Atlantic Canada. The major theme is how habitat-specific abiotic and biotic environmental factors shape the function and ecology of fishes. Using a hypothesis-driven approach, emphasis will be placed on the fundamental tasks of acquiring and expending energy to survive and reproduce, as well as the profound influence of temperature on organismal performance. The course involves field and lab exercises, with supplementary lectures. Students will gain experience with techniques for sampling wild fishes, experimental approaches to study the functional ecology of fishes, and identification and quantification of fish assemblages in subtidal, intertidal, and estuarine habitats in the Bay of Fundy region. **NOTE**: This course is offered exclusively in the Marine Semester. *Prerequisites*: At least one university level introductory course in each of ecology and zoology with a grade of "C" or better.

BIOL3955   **Biological Oceanography (A)**   **4 ch (3C 3L*)**

This course introduces students to a sub-discipline of oceanography that emphasizes the relationships between marine biological and ocean environmental systems. The course will introduce the ecology of planktonic organisms responsible for global ocean carbon cycling, and explain the major dynamical relationships among plankton ecology, population biology and the ocean environment (e.g., critical depth theory, biological pump theory). Applied mathematics is emphasized in these discussions and in the class and lab assignments. In the computer laboratories, students will learn the fundamentals of ocean ecosystem

modeling in the R computer language. *Prerequisite:* BIOL 1202, and at least one university level introductory course in calculus (MATH 1001, MATH 1003 or equivalent) with a grade of C+ or higher.

BIOL3963   Intertidal Ecology   4 ch (3C 3L)

This course introduces students to intertidal ecoogy. Topics covered will vary from year to year, but may include the origin, evolution, and diversty of seaweeds and intertidal invertebrates and their significant roles and services in coastal ecosystems. Students will learn through short-term lab and field observations and exercises, which will be supported by lectures, directed readings, and group discussions. **NOTE:** This course is offered exclusively in the Marine Semester. *Prerequisites:* At least one university level introductory course in each of ecology and zoology with a grade of "C" or better.

BIOL3973   Foraging Ecology   4 ch (3C 3L)

This course introduces students to the discipline of foraging ecology in the ocean. Topics covered may include predator-prey relationships, ocean productivity dynamics, top predator (mammal, bird and shark) foraging ecology, and marine feeding habitats. Students will participate in lab and field observations and exercises, lectures, readings, and group discussions. **NOTE:** This course is offered exclusively in the Marine Semester. *Prerequisites:* At least one university level introductory course in each of ecology and zoology with a grade of "C" or better.

BIOL4090   Honours Project   9 ch [W]

Gives academically strong Biology Majors, under the supervision of a full time faculty member, to undertake a thesis project with permission of the Department. Students who intend to apply for this elective are advised to consult with their intended supervisory faculty member at the beginning of their third year.

BIOL4115   Landscape Ecology   4 ch (3C 3L*)

Landscape Ecology is the study of ecology in heterogeneous environments. It is an interdisciplinary science that draws on elements of traditional ecology, biogeography, landscape architecture, ecosystem ecology, modeling, geostatistics, and remote sensing. It is characterized by the explicit consideration of space and time; where organisms live, how their environments vary, and how the relative locations of different components of the environment affect biological processes. This course covers these topics through lectures, labs, discussions, and a major group project. *Prerequisite:* BIOL 2585.

BIOL4155   Current Topics in Biology   3 ch (2C)

A lecture/seminar course to acquaint students with some of the outstanding recent developments in various fields. Restricted to students majoring in Biology or Marine Biology. *Prerequisite:* Permission of Instructor.

BIOL4245   Molecular Ecology   4 ch (3C 3L*)

Molecular Biology plays an important role in ecology. This course will introduce concepts and applications in molecular evolution, population genetics, quantitative genetics and ecological genomics. Topics will include gene expression, genomics, proteomics and bioinformatics. Students will become familiar with various molecular methodologies, data analysis, and result interpretation that can be used to study ecology, adaptation, and contemporary evolution. This course will appeal to those students interested in the natural sciences, as well as the medical sciences. *Prerequisite:* BIOL 2015 or BIOL 2245 or BIOL 3022 or permission of the Instructor.

BIOL4325   Biology of Marine Birds   4 ch (3C 3L*)

The biology of sea ducks, seabirds, and shorebirds. This course will cover aspects of life history, anatomy, physiology, behavior, and conservation of marine birds with an emphasis placed on North Atlantic species. *Prerequisites:* BIOL 2585, BIOL 2615.

BIOL4373   Tropical Marine Biology Field Courses   3 ch

An examination of tropical coastal ecosystems. The course will focus on the ecology of coral reefs, tropical fish ecology and physiology, tropical seaweed biology and mangrove ecology. The course consists of lectures, fieldwork and laboratory work. *Prerequisite:* BIOL 3173 or equivalent; or permission of instructor.

BIOL4385   Pharmacognosy and Natural Products Research 5 ch (3C 3L)

Pharmacognosy is the study of medicines derived from natural sources and BIOL 4385 will expose students to the strategies and techniques employed in the natural product drug discovery process. This course follows BIOL 3385 Advanced Microbiology, where students continue to experience isolation of microbes from plant and animal host tissues and determine the potential existence of bioactive natural products. Techniques include: aseptic technique, microbial culture maintenance and storage, fermentation, liquid-liquid partition, bioassay-directed fractionation, NMR and PCR determination of chemical structures and

microbial identity respectively. *Prerequisite:* BIOL 3385 or instructor's permission

BIOL4435   Biologically Active Natural Products and   3 ch (3C)   Secondary Metabolism (A) (Cross-Listed: CHEM 4435)

This course will examine the biosynthesis, biological activity and ecological significance of secondary metabolites. The following topics will include: the links between primary and secondary metabolic pathways; an overview of the mechanisms, chemistry and coenzymes involved in the biosynthesis of natural products; the acetate pathway; the Shikimate pathway; the mevalonate and methyl erythroid phosphate pathways; the alkaloids and chemical ecology. **NOTE**: This course may be listed as either BIOL 4435 or CHEM 4435. Credit cannot be obtained for both BIOL 4435 and CHEM 4435. *Prerequisites:* CHEM 2422 and BIOL 2065.

BIOL4445   Marine Behavioural Ecology   3 ch (3C)

Explores the relationship between animal behaviour, ecology and evolution. Theoretical concepts covered include the economics of animal decision making, predator-prey relationships, competition, fighting and assessment, sexual conflict and sexual selection, parental care and mating systems, alternative breeding strategies, altruism and co-operation, Whenever possible, marine organisms, and particularly invertebrates will be used to illustrate theoretical concepts. *Prerequisite:* BIOL 2585 Introductory Ecology.

BIOL4645 Biology and Conservation of Marine Mammals (A) 3 ch (3C) [W]

The biology of seals, whales, and sea-cows. Life histories, behaviour, reproduction, and population estimation techniques will receive special emphasis. The biological, economic, and moral aspects of man's direct and indirect influence on, and utilization of marine mammals will be discussed. *Prerequisite:* BIOL 2615.

BIOL4663   Advanced Elasmobranch Studies   3 ch (3C)

This course will introduce students to advanced studies in elasmobranch biology and ecology with an emphasis on sharks, in particular sharks of the Northern Hemisphere. Topics will include current techniques in shark research, global conservation measures, Canadian Shark Management Plans, shark diving industry, shark fishing, and in-depth studies on shark physiology. *Prerequisites:* BIOL 2615 and BIOL 3055 (or permission of instructor).

BIOL4693   Diversity and Systematics of Marine Invertebrates   4 ch

Introduces basic techniques for invertebrate identification, monitoring and biodiversity assessment in rich and diverse invertebrate fauna of the Quoddy Region. Practical work includes shipboard sampling, field trips to coastal sites and laboratory exercises that present a broad overview of invertebrates of intertidal, plankton and subtidal benthic communities. The course is held at the Huntsman Marine Science Centre, St. Andrews, and is twelve days in length. A charge of tuition, full board and lodging is required. *Prerequisite:* BIOL 2615 or equivalent.

BIOL4825   Introduction to Ecotoxicology (A)   4 ch (2C 3L*)

A theoretical and applied approach to the science of ecotoxicology, including application of the tools and procedures used to understand toxicant fate and effects in ecosystems. Both field (ed. Community level environmental "effects" monitoring) and laboratory (e.g. LC50 tests) methods for understanding contaminant fates and effects will be examined. *Prerequisite:* At least 20 ch of Biology courses completed.

BIOL4855   Biometrics   4 ch (3C 2T)

Students are introduced to methods of statistical analysis relevant to biological questions. Topics of study will include: experimental design, how to deal with noisy data (transformations); parametric and non-parametric tests; how to deal with missing data; regression (linear & non linear); statistical packages; and introduction to multivariate statistics (PCA and DFA). *Prerequisite:* STAT 2263 or equivalent.

BIOL4861   Advanced Environmental Biology (A)   4 ch (3C 3L*)

This course examines several of the main environmental issues of concern in the region, in Canada and around the globe such as impacts of natural resource development (e.g., oil and gas, forestry, mining), climate change, and water use and its pollution on the environment and on humans. It covers emerging options with green energy and sustainable development, and provides students with an in-depth understanding of the links between human activities and environmental health. *Prerequisite:* BIOL 1302.

BIOL4875   Environmental Techniques (A)   4 ch (3C 3L*)

A techniques course, in which students will have practical experience in sampling and analytical techniques, including: water, air and soil sampling; plant and animal sampling in field and lab; and chemical analyses of tissues and water, air and soil. Appropriate study design and statistical analyses of collected data will be emphasized.

BIOL4935 **Comparative Animal Behaviour** 3 ch (3C)

Physiological bases of behaviour, the animal in relation to its environment, the animal in its social context, and the evolution of behavioural displays and activities. Emphasizes the adaptive significance of behavioural activities (ethology) rather than experimental psychology. *Prerequisite:* BIOL 2615.

BUSINESS ADMINISTRATION

Course Numbering System
The Faculty of Business uses the following numbering system for courses offered by the School
a. A first digit of:
1 designates an introductory level course.
2 designates an intermediate level course which normally has a prerequisite specified in the course designation.
3 designates an advanced level course which has one or more *Prerequisites* specified in the course description.
4 designates an advanced level course which normally has *Prerequisites*. These courses are intended for senior students who have successfully passed a minimum of 75 ch of BBA or BAM course work.
b. The second digit identifies the nature of the course, as follows:
1 general,
2 accounting,
3 marketing,
4 finance,
5 organizational behaviour and management,
6 operations and information management,
7 law,
8 industrial relations and human resource management.
c. The third and fourth digits distinguish different courses in the same field.
Course Offerings
Not all courses listed in this section will be offered each year. The official timetable must be consulted for courses offered each year.
NOTES:
In order to take a Business Administration (BA) course that has a prerequisite, student must earn a C or better in the prerequisite course(s), regardless of the program in which the student is registered.
Students who feel they have the equivalent prerequisite background through a combination of coursework and work experience, may apply to the Faculty of Business on a Permission and Request Form for permission to enter a course. These forms are available from the Faculty of Business office in Oland Hall Room 245.
Students enrolled in BA courses who do not have the stated *Prerequisites*, and who have not been given the permission of the Faculty of Business to remain in the course, will be administratively withdrawn from the course AFTER the last day to add courses each term.
See beginning of Section F for abbreviations, course numbers and coding.

BA1216 **Accounting for Managers I** 3 ch (3C)

Examines the uses of accounting information within and outside organizations. Focuses on the impact of business events on the financial statements. Introduces case studies, oral and written presentations, group problem solving, and unstructured problems. *Prerequisite:* MATH 1853 with a minimum grade of C or admission to the Bachelor of Health Program.

BA1501 **How Business Works** 3 ch (3C)

This course provides the students with an acessible, comprehensive and dynamics introduction to business and management in today's globalized world. Through readings, case students and guest lectures you will explore a wide range of topics, such as: leadership and motivation, what customers want, financial soundness and ethical concerns, and how economic realities affect businesses. Students will also understand business from both a profit and non-profit context.
Students must enrol in this course prior to completing 30 credit hours of Business (BA) courses. BAHMT 3+1 students who wish to enrol in this course must do so prior to their college year.

BA1605 **Business Decision Analysis I** 3 ch

Basic probability concepts, random variables, descriptive measures, properties of distributions, statistical decision theory and Bayesian approaches are introduced. Discrete and continuous probability models and their applications to business problems are also covered. *Prerequisites:* MATH 1853 (or equivalent) with a minimum grade of C.

BA2001 **Business Communications** 3 ch (3C) (LE)

Introduces students to topics related to business communications, including preparing research papers and business documents; delivering presentations, interviewing, basic speaking and listening skills, running business meetings; and a number of topical issues related to business communications in the 21st century. *Prerequisites:* This course is open to all business students. Students outside of the Faculty of Business may request permission from the instructor to attend this class.

BA2123 **Introduction to Digital Business** 3 ch (3C)

This is an introductory course that reviews and examines key examples and cases of companies that have transformed their business models throught the integration of digital technologies into their operations. Cases will be selected to provide a historic overview as well as up-to-date examples of digital transformation across a broad range of industries and business functions. The course will also survey the range of frameworks used to explain digital leadership and maturity. *Prerequisite:* Successful completion of 24 ch of BBA or CS program.

BA2217 **Accounting for Managers II** 3 ch (3C)

Continues the study of accounting by examining the uses of accounting information within the organization. Case studies will be used extensively. Emphasis placed on solving unstructured problems through the use of cases and other materials. Oral and written presentation skills are also emphasized. Credit will not be granted for both BA2217 and HTM 2217. *Prerequisite:* BA 1216 with a minimum grade of C.

BA2303 **Principles of Marketing** 3 ch (3C) [W]

A basic foundation of marketing theory and analysis, providing the basic analytical framework from which to approach the decision-making process and issues related to the marketing function.

BA2501 **Introduction to International Business** 3 ch (3C)

The course examines issues and problems which arise when business operations transcend national boundaries. Topics include the dimensions of the contemporary international economy, politics and management. Course examines theories and activities leading toward international trade, investment and management of international firms. *Prerequisites:* BA 2504, ECON 1013 and ECON 1023 with a minimum grade of C.

BA2504 **Introduction to Organizational Behaviour** 3 ch (3C)

An introduction to the contributions of the applied behavioural sciences to the study of people at work in organizations. The fundamentals of individual and group behaviour are covered as well as selected topics in motivation, leadership, communication, conflict and organizational change. *Prerequisite:* Successful completion of 24 credit hours or admission to a certificate program in the Faculty of Business.

BA2606 **Business Decision Analysis II** 3 ch (3C)

Introduction to statistics, statistical techniques used in business situations, sampling theory, estimation, hypothesis testing, Chi-square, t and F distributions, Bayesian inference, association and trend analysis, and their applications. *Prerequisite:* BA 1605 with a minimum grade of C.

BA 2611 **Business Data Visualization** 3 ch (3C)

Communication is one of the most important skills for business leaders. To explain a new idea, to persuade management to take actions, or to achieve consensus with the business stakeholders, data is key. This course deals with how to visualize business data for effective communication. Presenting business data in a way that enables one to grasp the implcations of the data is easily more important than ever, given that business data is generated at an exponential rate and that more companies are employing evidence-based management. Through hands-on exercises with computer tools frequently used in companies, students will have opportunities to learn how to explore and visualize business data for effective communication. *Prerequisite:* Completion of 30 credit hours.

BA2663 **Technology Trends in Digital Business** 3 ch (3C)

This course examines the technologies and technological trends driving the digital transformation of business models. The topics covered will reflect the both historic and current technologies that are recognized or have the potential to disrupt incumbent business models. *Prerequisite:* Successful completion of 24 ch of BBA or CS program.

BA2738 **Administrative Law (O)** 3 ch (3C)

Begins with a brief introduction to our Constitutional system. Then the distinctions between judicial, quasi-judicial, and purely discretionary power are developed through cases followed by a study of law relating to notice, the right to a hearing, and the nature of hearings before tribunals. Concludes with an examination of the interposition of judicial review of administrative action and the legal remedies available to protect individual rights adversely affected by the administrative process.

BA2758 **Employment Law** 3 ch (3C)

This course examines Canadian employment legislation and its application. Includes a study of laws governing union-management relations, work standards, employment equity, and relevant laws governing recruitment, selection, and employment of personnel, Differences in federal and provincial employment laws will be discussed.

Prerequisite: Successful completion of a minimum of 30 credit hours, or admission to a certificate program within the Faculty of Business.

BA2858   **Introduction to Human Resources Management**   **3 ch (3C)**

A study of the personnel function within an organization and its relationship to the employees and to the labour market. Includes human resource planning, recruitment and selection, training, performance measurement, wage and salary administration, and job satisfaction. Concludes with a discussion of current issues that affect personnel administration. Prerequisite: BA 2504 with a minimum grade of C.

BA2903   **Work Term Report I**   **1 ch**

Identifies an opportunity or problem in the workplace, analyzes its source and development, addresses key issues to be considered, offers alternatives and makes recommendations including clear provisions for implementation.

BA3101   **Special Topics in Business (O)**   **3 ch (3C)**

This course examines various issues and events that influence the area of Business Administration. Topics will vary from year to year reflecting contemporary issues and events.

BA3123   **Issues in Business and Society (O)**   **3 ch (3C)**

Uses the applied social sciences as a theoretical framework for analyzing the contemporary business organization in its environment. Such topics as business ethics, the social responsibility of business, cultural relativism, and the multinational organization are examined. Examines the many new demands made on business by various groups (e.g. consumers, environmentalists, employees, minorities, anti-technology groups, etc.) and how they affect business decision making. Prerequisites: BA 2504 with a minimum grade of C and successful completion of 60 ch.

BA3129   **Business Research Methods**   **3 ch (3C)**

Students will learn how to design, conduct and analyze research for making informed business decisions. The course will focus on basic methodologies, qualitative and quantitative methods, data sources, reliability, validity, and other measurement issues, data collection and research design, ethics in research, and report writing and presentation. Prerequisites: BA 1605 and one of BA 2303, BA 2858 or HTM 1103 and Co-requisite: BA 2606 with a minimum grade of C. **NOTE**: Credit will be given for only one of BA 3129, BA 4319, BA 4829 and HTM 4129.

BA3131   **Creative Problem Solving**   **3 ch (3C)**

This course presents the student a structured creative problem solving process (such as the Simplexity Thinking System, Basadur 1995) as a way to discover new ideas and explore opportunities for today's businesses. Students will work in groups to learn and practice this process using local business problems. (Course will have significant experiential component). Prerequisite: Successful completion of 60 ch.

BA3133   **Business Model Validation**   **3 ch (3C)**

This course presents the student an entrepreneurial thinking and methods process with a particular focus on how customer technology and data can be used to re-examine a company's business models and value chain, and drive customer-focused innovation. (Course will have significant experiential component). Prerequisite: Successful completion of 60 ch.

BA3134   **Government and Business (A)**   **3 ch (3C)**

Examines the technological structure of major industries in order to understand the basis for government intervention. Consideration is given to anti-trust policy, subsidization, utility regulation and government ownership in Canada. The strengths and weaknesses of these techniques are considered. Open to third and fourth year students who have appropriate background in the social sciences.

BA3135   **Design Thinking**   **3 ch (3C)**

This course presents the student the latest design thinking methods and the field of experience and service design. Projects and case studies will be used to help develop skills to assist organizations in their digital transformation and maturity. (Course will have significant experiential component). Prerequisite: Successful completion of 60 ch.

BA3136   **Customer-Focused Innovation**   **3 ch (3C)**

This course explores how customer (user) data and analytics are being used, along with a multi-disciplined approach, to create new ideas and innovative insights for growing new and old enterprises. (Course will have significant experiential component). Prerequisite: Successful completion of 60 ch.

BA3201   **Special Topics in Accounting (O)**   **3 ch (3C)**

This course examines various issues and events that influence the area of Accounting. Topics will vary from year to year reflecting contemporary issues and events.

BA3224   **Accounting for Managers III**   **3 ch (3C)**

Continues the study of accounting for managerial planning and control. Topics include measuring divisional performance, transfer pricing, short-term decision models and revenue variance analysis. Prerequisites: BA 2217 with a minimum grade of C.

BA3235   **Intermediate Accounting I**   **3 ch (3C)**

Gives a more detailed understanding of accounting principles and practices than is available in an introductory course. Topics to be discussed include the definition and measurement of assets and of income. This course combined with BA 3236 generally constitutes a credit in the programs of the professional accounting organizations. Prerequisites: BA 2217 with a minimum grade of C.

BA3236   **Intermediate Accounting II**   **3 ch (3C)**

Includes an examination of the problems involved in the definition and measurement of liabilities and stockholders' equity, income taxes and funds flow. Co-requisite: BA 3235 with a minimum grade of C.

BA3301   **Special Topics in Marketing (O)**   **3 ch (3C)**

This course examines various issues and events that influence the area of Marketing. Topics will vary from year to year reflecting contemporary issues and events.

BA3304   **Marketing Management**   **3 ch (3C) [W]**

Covers the application of theory and analytical tools from the marketing management viewpoint. This integrated study will focus upon the analysis and solution of complex marketing problems for a contemporary environment. Topics include industrial, international, not-for-profit marketing; marketing of services, images and causes; and ethical issues. Prerequisites: BA 2217 and BA 2303 with a minimum grade of C.

BA3305   **Marketing on the Internet**   **3 ch (3C)**

This course examines the integration of Internet in an organization's marketing strategy. Topics include, goals for online marketing, customer communications, interactive Internet pages, and customer service issues. Prerequisites: BA 2303 and one of BA 2123 or BA 2663 with a minimum grade of C.

BA3328   **Consumer Behaviour**   **3 ch (3C) [W]**

Designed to expose a variety of concepts, explain their interrelationships, and develop an understanding of consumer decision making processes. Includes basic individual determinants of consumer behaviour, environmental influences on consumers, purchase processes, post-purchase processes, market segmentation, brand loyalty and message appeals. Prerequisite: BA 2303 with a minimum grade of C.

BA3339   **Marketing Communications (A)**   **3 ch (3C) [W]**

Examines forms of marketing communications, emphasizing their role in the Canadian environment. Includes basic communications theory related to basic consumer behaviour theory, media availability and selection, promotion channels, personal selling, industry self-regulation, role of government regulation. Prerequisite: BA 2303 with a minimum grade of C.

BA3371   **Marketing of Services**   **3 ch (3C) [W]**

This course builds on the basic marketing elements to enable the student to contend with marketing problems and opportunities that present themselves in the service industries. The marketing plan and research techniques are applied to actual situations and marketing issues. Cases, industry events and guest lecturers will supplement class lectures and seminars. Prerequisite: BA 2303 with a minimum grade of C.

BA3401   **Special Topics in Finance (O)**   **3 ch (3C)**

This course examines various issues and events that influence the area of Finance. Topics will vary from year to year reflecting contemporary issues and events.

BA3421   **Personal Financial Planning**   **3 ch (3C)**

The objective of this course is to introduce the students to issues and concepts of personal financial planning, with an emphasis on application to real life situations. Topics include concepts of personal finances, credit, financial resources and controlling your financial future. The focus is to provide tools for students to use in planning their financial futures. Proposed Prerequisite: BA 1216 with a minimum grade of C.

BA3425   **Managerial Finance**   **3 ch (3C)**

An introduction to the basic tools and techniques for making various financial decisions. Topics include analysis of financial statements, time value of money, bond and stock valuation, basics of risk and return, various capital budgeting techniques, short-term financial planning and working capital management (such as cash, credit and inventory management). Prerequisite: BA 2217 with a minimum grade of C.

BA3426   **Corporate Finance**   3 ch (3C)

Advanced topics in risk and return, cost of capital, advanced concepts in valuation, raising capital, financial leverage and capital structure, dividend policy, leasing, mergers and acquisitions and the basics of financial risk management. *Prerequisite:* BA 3425 with a minimum grade of C.

BA3501   **Special Topics in Organizational**   3 ch (3C)
                 Behaviour and Management (O)

This course examines various issues and events that influence the area of Organizational Behaviour and Management. Topics will vary from year to year reflecting contemporary issues and events.

BA3547   **Organizational Communication (A)**   3 ch (3C) [W]

The communication process is explored from the individual, small group, and organizational levels. Topic areas include perception and communication, patterns of miscommunication, the motivational base of communications, and organizational climate and communications. The student is exposed to a variety of communication exercises and cases in order to experience some of the issues and problems in organizational communications. *Prerequisite:* BA 2504 with a minimum grade of C.

BA3557   **The Management of Planned Changed (A)**   3 ch (3C)

Complex organizations in today's society find themselves immersed in a world of social, political and economic change in which their survival depends on innovation and adaptation. The course familiarizes the student with techniques for diagnosing the need for organization change, ways of designing adaptive organization systems, and the methods and problems of persons functioning as change agents within organizations. *Prerequisite:* BA 2504 with a minimum grade of C.

BA3601   **Special Topics in Operations and (O)**   3 ch (3C)
                 Information Management

This course examines various issues and events that influence the area of Operations and Information Management. Topics will vary from year to year reflecting contemporary issues and events.

BA3623   **Management Science: Deterministic Models**   3 ch (3C)

This course introduces students to deterministic models and solution methods applicable to business problems. Topics such as linear programming, integer programming, network models, project scheduling, inventory models, multi-criteria optimization and application of software packages in solving management science problems will be covered. *Prerequisites:* BA 1605 (or the equivalent), and MATH 1853 or the equivalent with a minimum grade of C.

BA3624   **Management Science: Probabilistic Models (O)**   3 ch (3C)

This course introduces students to probalistic models of management science. Topics such as stochastic models, probabilistic dynamic programming, queuing theory, simulation, stochastic inventory models, game theory and Markov processes will be covered. *Prerequisite:* BA 3623 (or the equivalent) with a minimum grade of C.

BA3653   **Operations Management I**   3 ch (3C)

This course introduces students to concepts, problems and analysis related to the design, planning, control, and improvement of manufacturing and service operations. Topics such as information flow, operations strategy, product and process design, capacity planning, managing quality, managing inventory, forecasting methods, facilities planning and location decisions will be covered. *Prerequisites:* BA 3623 and BA 2606 with a minimum grade of C.

BA3654   **Operations Management II (O)**   3 ch (3C)

This course is a continuation of BA 3653 with an emphasis on contemporary developments in the field. Topics such as just-in-time, lean systems, supply chain management, resource planning, waiting lines and operations scheduling will be covered. *Prerequisite:* BA 3653 with a minimum grade of C.

BA3661   **Supply Chain Management (O)**   3 ch (3C)

The course objectives are to understand the key elements of a supply chain and the effect of business decisions on supply chain performance. Activities within the supply chain include communication, inventory management, transportation, and the cooperation between buyers and suppliers. *Prerequisites:* BA 1605 and BA 2606 with a minimum grade of C or permission of the Faculty of Business.

BA3672   **Introduction to Management Information Systems**   3 ch (3C)

This course introduces the essential concepts of management information systems. Several inter-related questions about the use of information technology in organizations are discussed; how information systems can be used by an organization to achieve an advantage over its competition; and the implications of management information systems to business managers (e.g., risks and opportunities). While this course is not primarily

about technology, students will also have an opportunity to be exposed to essential tools for managers to analyze business data (e.g., database and Tableau). *Prerequisite:* Successful competion of 54 credit hours in any program, or admission to the Certificate in Accounting, or permission of the instructor.

BA3701   **Special Topics in Law**   3 ch (3C)

This course examines various issues and events that influence the area of Law directly related to business. Topics will vary from year to year reflecting contemporary issues and events.

BA3705   **Business Law**   3 ch (3C)

Introduction to the Law of Torts, contracts; particularly those relevant to businesses such as debtor/creditor, sale of goods, mortgages, leases, forms of business organizations. Credit will not be granted for BA 2703/BA 2704 or BA 2705 and BA 3705. *Prerequisite:* Successful completion of 60 credit hours.

BA3715   **Labour Law (O)**   3 ch (3C)

Examines Canadian labour legislation and its application. Includes a study of the law governing: union-management relations, collective bargaining, certification, Labour Relations Boards, the legal application of economic pressure, injunctions, strikes, picketing, appeals, and all related remedies. Includes an examination of constitutional differences between Federal and Provincial legislation. *Prerequisite:* BA 3813 with a minimum grade of C.

BA3718   **Legal, Privacy, and Security Issues on the Internet**   3 ch (3C)

This course deals with the various systems that provide privacy and security on the Internet, as well as the legal issues that arise in electronic commerce and digital business design. Includes an examination of encryption, fire walls, user authentication, as well as copyright of intellectual property and contracts. *Prerequisites:* BA 2123 and BA 2663; or BA 2123 and CS 2813, CS 3403, and CS 2513 with a minimum grade of C.

BA3801   **Special Topics in Industrial Relations and**   3 ch (3C)
           Human Resource Management (O)

This course examines various issues and events that influence the area of Industrial Relations and Human Resource Management. Topics will vary from year to year reflecting contemporary issues and events.

BA3813   **Introduction to Industrial Relations**   3 ch (3C)

Provides a general introduction to the field of industrial relations. The objectives and values of the various parties involved in collective bargaining in the private and the public sectors are identified. Consideration is given to how these are modified in the bargaining process. The role of industrial conflict and dispute settlement procedures are examined. *Prerequisites:* BA 2858 with a minimum grade of C, and successful completion of 60 ch or admission to the Certificate in Human Resource Management.

BA3900   **Community Leadership**   6 ch (LE)

As part of the Certificate in Community Leadership, students will take part in volunteer work an approved placement for up to 160 hours over the course of the program. In addition to this, students will participate in training and leadership workshops consisting of up to 35 hours over the course of the program. Students must complete all of the experiential segments of the Certificate in Community Leadership programme to be awarded the 6 ch. *Prerequisite:* Admission to the Certificate in Community Leadership.

BA3903   **Co-Op Work Term Report II**   1 ch

Identifies an opportunity or problem in the workplace, analyzes its source and development, addresses key issues to be considered, offers alternatives and makes recommendations including clear provisions for implementation.

BA4003   **Independent Study - Digital Business Design**   3 ch

This course will provide the student with a deepening knowledge in the Digital Business Design area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4101   **Competitive Strategy I**   3 ch (3C) [W]

Integrates material from other courses from a top management perspective, including factors that influence decision makers and the decision-making process. Defines strategy. Concentrates on development

of strategies for organizations competing in a single industry. Analyzes industry structure and dynamics and resources and processes that enable an organization to develop and sustain competitive advantages. **NOTE**: credit will not be granted for both BA 4101 and HTM 4101. *Prerequisite:* Credit in all courses required for the BBA except BA 3705.

BA4103 **Independent Study – Management** **3 ch**

This course will provide the student with a deepening knowledge in the Management area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4107 **Studies in Small Business** **3 ch (3C) [W] (LE)**

A seminar course designed to acquaint students with the problems of starting and operating a small business. Class discussions focus on actual small business successes and failures. Frequently, local business owners join in discussions. Emphasis is on written and video-taped cases and on a high degree of student participation. *Prerequisites:* BA 1216 and BA 2303 with a minimum grade of C.

BA4108 **Management of New Enterprise (A) 3 ch (3C) [W] (LE)**

A project course designed to allow students to prepare a proposal for starting a new business or to write a case study of an existing enterprise. In the latter case, the business people involved frequently participate in the classroom discussion. Students cannot receive credit for both BA 4108 and BA 4109. *Prerequisites:* BA 1216, BA 2303 and BA 4107 with a minimum grade of C.

BA4147 **Research Report (O)** **3 ch (3C) [W]**

This course involves planning and carrying out a research project or a theoretical investigation under the supervision of a faculty member. Wide latitude is given in the selection of topics and in the methods for investigation but all projects must be approved by the Undergraduate Studies Committee before the last day for adding courses in the term. Students must present written reports and defend them before a committee from the Faculty. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years. *Prerequisite:* BA 4129 (or the equivalent) with a minimum grade of C.

BA4148 **Research Report (O)** **3 ch (3C) [W]**

This course involves planning and carrying out a research project or a theoretical investigation under the supervision of a faculty member. Wide latitude is given in the selection of topics and in the methods for investigation but all projects must be approved by the Undergraduate Studies Committee before the last day for adding courses in the term. Students must present written reports and defend them before a committee from the Faculty. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years. *Prerequisite:* BA 4129 (or the equivalent) with a minimum grade of C.

BA4193 **International and Comparative Management (O)** **3 ch (3C)**

Introduces and surveys international business and management. Examines the environment in which international business occurs; the role of culture, political systems and level of economic development in differentiation of management patterns; and formation and implementation of global business strategies in the international environment, focusing on political, social and cultural issues.

BA4203 **Independent Study – Accounting** **3 ch**

This course will provide the student with a deepening knowledge in the Accounting area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4207 **Current Accounting Issues** **3 ch (3C)**

Concentrates on the application of accounting theory to contemporary areas in financial reporting. Topics covered vary according to the changing importance of current accounting issues. *Prerequisite:* BA 3236 with a minimum grade of C.

BA4221 **Advanced Management Accounting** **3 ch (3C)**

Cost accounting information and its use in managerial control. Deals in detail with cost accumulation, job and process costing, standard costing, and variance analysis. Supplements the material contained in BA 3224. Examines uses of costing techniques in other than manufacturing situations. Uses case material extensively. *Prerequisite:* BA 3224 with a minimum grade of C.

BA4223 **Accounting Information Systems** **3 ch (3C)**

Introduces the important role that accounting information systems play in today's business world. Emphasizes the accounting information system's function of collecting, recording, and storing business data in order to produce the information for sound business decisions. *Prerequisite:* BA 2217 with a minimum grade of C.

BA4227 **Contemporary Issues in Management Accounting (O) 3 ch (3C)**

Students' knowledge of the role of accountants in managerial planning and control is expanded. The interface between accounting and management science is emphasized.

BA4229 **Advanced Financial Accounting I** **3 ch (3C)**

This course includes detailed coverage of Accounting for Debt investments and Equity investments including Business combinations, Equity Accounting, Consolidations and Joint ventures. *Prerequisite:* BA 3236 with a minimum grade of C.

BA4231 **Advanced Financial Accounting II** **3 ch (3C)**

This course includes detailed coverage of segmented reporting, interim reporting, and Foreign Transactions and Hedges, Supplemental reporting through MD&A. Also includes Financial Reporting for Foreign Operations, Non-Profit Entities, Public Sector, and Partnerships. Additional relevant topics may be added as needed. *Prerequisite:* BA 3236 and BA 4229 with a minimum grade of C.

BA4237 **Income Taxation** **3 ch (3C)**

This taxation course covers the current Canadian legislation governing both personal and corporate income taxation. Students will be expected to apply their knowledge of the legislation by computing corporate income, income from business, income from property, capital gains and losses and income taxes payable. This course also introduces more complex topics as relevant. Such topics may include corporate reorganizations, distributions and tax planning, etc. *Prerequisite:* BA 3235 (or equivalent) with a minimum grade of C.

BA4238 **Auditing** **3 ch (3C)**

Examines the roles, responsibilities and legal liabilities of internal and external auditors in Canada and their professional organizations. Topics developed include internal control systems and their evaluation; audit evidence and problems related to the audit of particular assets, liabilities, and capital and income accounts. A brief study is also made of audit procedures and priorities. *Prerequisites:* BA 3236 and one of BA 4223 or BA 3672 with a minimum grade of C.

BA4242 **Accounting Theory (A)** **3 ch (3C)**

Focuses on accounting literature, especially with respect to financial reporting and accounting standard setting. *Prerequisite:* BA 3235 with a minimum grade of C.

BA4303 **Independent Study – Marketing** **3 ch**

This course will provide the student with a deepening knowledge in the Marketing area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4334 **Public and Non-Public Marketing (O)** **3 ch (3C) [W]**

Focuses on the application of traditional marketing concepts to the "non business" sector. Types of organizations studied include government, universities, performing arts groups, charities, political groups and health care facilities. Students are encouraged to specialize in one or two areas of interest through a major project. Class time will be divided among lecture, case discussion and student presentations. *Prerequisite:* BA 3304 with a minimum grade of C.

BA4398 **International Marketing** **3 ch (3C) [W]**

Examines planning marketing strategies for international markets including operations of multinational firms. The main purpose is to show how companies entering the global market should analyze international

marketing environment, identify different kinds of international opportunities, decide which particular markets to enter, decide how to enter the chosen market, develop marketing mix strategies for the chosen market and develop an effective organization for pursuing international marketing. *Prerequisite:* BA 3304 with a minimum grade of C.

BA4437   Investment Analysis and Portfolio Management (O)   3 ch (3C)

Introduces students to a basic knowledge of investment media, security markets, security analysis and the role of financial intermediaries in the investment process. Emphasis on the interpretation of economic indicators and analysis of published financial information in order to select superior investment opportunities. Technical analysis, random walk theory and optimal portfolio selection are covered. Application of quantitative techniques is an essential component of the course. *Prerequisite:* BA 3425 with a minimum grade of C.

BA4455   Derivatives: Options and Futures   3 ch (3C)

This course will examine the evolution of the derivative markets, market micro-structure, trading strategies, pricing models, and risk management using derivative instruments such as futures, options and swaps. *Prerequisite:* BA 3425 with a minimum grade of C.

BA4603   Independent Study - Quantitative Methods   3 ch

This course will provide the student with a deepening knowledge in the Quantitative Methods area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4644   Project Management (O)   3 ch (3C)

Presents and explores a project management framework. Also illustrates general principles and concepts in the context of information systems development projects.

**BA4803   Independent Study - Human Resource Management &   3 ch
Industrial Relations**

This course will provide the student with a deepening knowledge in the Human Resource Management & Industrial Relations area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

BA4813   Negotiations and Dispute Resolutions   3 ch (3C)

The aim of this course is to provide an in-depth examination of conflict, negotiation and dispute resolution principles. The course has four specific objectives: to increase students' understanding of the causes and consequences of conflict, to explore various methods of reducing or resolving conflict, to develop an understanding of the different levels and sources of conflict and to apply negotiation and dispute resolution principles to various aspects of industrial relations. *Prerequisite:* BA 3813.

BA4853   Recruitment and Selection   3 ch (3C)

This course is designed to acquaint students with important issues in the recruitment and selection of employees. The roles of job analysis in the development of selection programs will be stressed. Strategies for effective recruitment will be discussed as will the various selection devices available to organizations. In all cases, the legal context of recruitment and selection will be considered. *Prerequisites:* BA 2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management, and successful completion of BA 1605, BA 2858, and BA 3813 with a minimum grade of C.

BA4854   Training and Development   3 ch (3C)

This course is designed to familiarize students with issues and techniques of training in organizations. Emphasis will be placed on an assessment of training needs, instructional methods, and evaluation of training outcomes. *Prerequisites:* BA2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management and successful completion of BA 1605, BA 2858 and BA 3813 with a minimum grade of C.

BA4855   Compensation Structure Development   3 ch (3C) [W]

Explores the theory and practice of compensation structure development based on concepts of internal and external equity. Internal equity focuses on assessing the relative worth of different jobs in an organization through job evaluation. External equity involves assigning pay levels to different jobs in an organization based on data collected from wage and salary surveys of competitors. Students are required to apply concepts and techniques discussed in class within a group project that entails developing a compensation structure for a hypothetical company. *Prerequisites:* BA 2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management and successful completion of BA 1605, BA 2858 and BA 3813 with a minimum grade of C.

BA4856 Evaluating and Rewarding Employee Performance 3 ch (3C) [W]

Explores the theory and practice of performance appraisal and performance-based pay. Performance appraisal topics include appraisal instruments, sources of appraisal, increasing appraisal accuracy, and conducting appraisal interviews. Performance-based pay topics include traditional merit pay as well as incentive plans, gain sharing, and profit sharing. Students are required to apply concepts and techniques discussed in class within several assignments and/or exercises. *Prerequisites:* BA 2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management and successful completion of BA 1605, BA 2858 and BA 3813 with a minimum grade of C.

**BA4857   Management of Occupational Health and   3 ch (3C)
Employee Wellness**

A growing number of organizations are realizing that not only is properly managing the occupational health, safety and well-being of employees at all organizational levels right and ethical, it can also be an important competitive advantage. Topics will include, but are not limited to, employee rights and workers' compensation, the chemical, biological and psychosocial hazards faced by employees and how to recognize, assess and control these hazards. Furthermore, students will be provided with the tools and knowledge to develop workplace wellness and health promotion programs. *Prerequisites:* BA 2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management and successful completion of BA 1605, BA 2858 and BA 3813 with a minimum grade of C.

BA4866   Management of Technology (O)   3 ch (3C)

A study of the critical role that technology, particularly information technology, plays in competition. The emphasis will be on aligning human resources practices and technological and organizational strategies. *Prerequisites:* BA 2858 with a minimum grade of C and successful completion of 75 ch, or admission to the Certificate in Human Resource Management and successful completion of BA 1605, BA 2858 and BA 3813 with a minimum grade of C.

BA4898   Strategic HRM Policy   3 ch (3C) [W]

Explores the formulation and implementation of HRM strategies designed to facilitate the effective and efficient operations of organizations. Students are expected to integrate the material learned in other HRM courses and apply their accumulated knowledge to HRM issues posed in numerous case studies. The course will be taught primarily via case analyses and extensive class discussion. *Prerequisites:* All other courses required for the HRM major, including the five compulsory courses BA 2504, BA 2758, BA 2858, BA 3129 and BA 3813 with a minimum grade of C as well as six ch of HRM electives selected from the following courses: BA 4813, BA 4853, BA 4854, BA 4855, BA 4856, BA 4866 with a minimum grade of C.

BA4903   Work Term Report III   1 ch

Identifies an opportunity or problem in the workplace, analyzes its source and development, addresses key issues to be considered, offers alternatives and makes recommendations including clear provisions for implementation.

BA5001   Communication in the Healthcare Environment   3 ch (3C)

Communicating in a fast-paced healthcare environment is often a challenge. Collaborative leadership, team functions, negotiation and conflict resolution will be discussed using real world examples with particular attention to the role of the supervisor (Charge nurse) and unit manager. **NOTE:** This course is offered exclusively for students enrolled in the Nursing Leadership and Management Certificate.

**BA5209   Introduction to Financial Stewardship   3 ch (3C)
in the Non-Profit Sector**

This course focuses on managing resources and evaluating performance when it is not appropriate to attach monetary values to outcomes. It provides a basic understanding of financial reporting for non-profit organizations. Management accounting concepts and techniques

applicable to a non-profit organization will also be examined with an emphasis on the budgetary process and budgetary control. **NOTE:** This course is offered exclusively for students enrolled in the Nursing Leadership and Management Certificate. *Prerequisite:* BA 5001 with a minimum grade of C.

BA5504   Change Leadership in Healthcare Environments   3 ch (3C)

This course explores the principles, trends and issues of leadership in health organizations. Current theories of leadership with attention to styles, tasks, organizational culture and models will be discussed. Through a combination of theory and practical application participants will gain an understanding of the responsibilities and outcomes of effective leadership and leading change. **NOTE:** This course is offered exclusively for students enrolled in the Nursing Leadership and Management Certificate.

BA5858   Introduction to Human Resources in Healthcare   3 ch (3C)

Human Resource Management is integral to managing and leading teams. Effective human resource management facilitates quality service delivery for the recipients of healthcare, as well as a positive work environment for healthcare professionals. The student will have an opportunity to explore challenges and the best practices of human resource management within the healthcare environment. Some topics include told definition, performance evaluation, team motivation, and scheduling. **NOTE:** This course is offered exclusively for students enrolled in the Nursing Leadership and Management Certificate. *Prerequisite:* BA 5001 with a minimum grade of C.

BA5859   Quality Management in Healthcare   3 ch (3C)

Quality Management in Health Care (QMHC) examines the application of Quality Management (QM) concepts and practices in healthcare. This course will review the basic tenets of Quality Management and its role within an organization to achieve and maintain a desired level of excellence. The course adopts a brand perspective examining the development of policy and strategy as well as implementation, and control. This course uses the lens of healthcare to examine the application of QM tools for effective process improvement. **NOTE:** This course is offered exclusively for students enrolled in the Nursing Leadership and Management Certificate. *Prerequisite:* BA 5001 with a minimum grade of C.

CHEMICAL ENGINEERING

CHE2003   Fundamentals I - Mass Balances   3 ch (3C)

Introduces the discipline of Chemical Engineering and develops fundamental skills of unit conversion and material balancing. Systems of units for parameters such as concentration, flow, pressure and temperature are explained. Skills for solving steady-state material balance problems on reactive and non-reactive systems. An understanding of the chemical engineering discipline is gained through examples of major industries such as petroleum, pulp and paper, mining, and power production, etc. *Co-requisite:* MATH 1503.

CHE2004   Fundamentals II - Mass & Energy Balances   3 ch (3C 1T)

Fundamentals such as vapor-liquid equilibrium, partial saturation and real gas relationships are introduced and integrated into material balance problems. The concepts of enthalpy and energy balances on open systems. Unsteady-state and simultaneous mass and energy balance systems are modeled and solved using computer packages. *Prerequisite:* CHE 2003.

CHE2012   Engineering Thermodynamics   3 ch (3C 1T)

The First and Second Laws of Thermodynamics and their application to practical problems; properties of liquid and vapours; ideal gas relationships; steam and gas power cycles and their application to steam power plants, internal combustion engines and gas turbines; combustion characteristics; compressible flow; refrigeration and heat pumps. *Prerequisite:* CHEM 1872 or equivalent.

CHE2302   Transport Phenomena   4 ch (3C 1T)

Foundational analogies between fluid mechanics, heat transfer, and mass transfer, and the applications of those analogies to practice: Navier-Stokes equations, Fourier's Law, Fick's Laws, Chilton-Colburn J-factor. Turbulence: boundary layers, scaling, dispersion. Techniques for solving unsteady-state systems. Empirical correlations for estimating heat and mass transfer coefficients. Motion of particles in fluids. Theory and design of industrial equipment for clarification/sedimentation and cyclone separation. *Co-requisites:* MATH 2513, ME 3513.

CHE2412   Chemical Engineering Laboratory I   3 ch (1C 3L) [W]

Covers bomb and flow calorimetry, material and energy balance study, fluid mechanics experiments including flowmeter calibrations and pressure drop measurements in pipes and fittings. Interpretation of

experimental data, group dynamics, safety issues, report writing and oral presentations. Students will work under close supervision. *Co-requisites:* CHE 2004; ME 2413 or CHE 2012; ME 3513 or ME 3511.

CHE2501   General Materials Science   3 ch (3C 1T)

The principles relating the properties and behaviour of engineering materials to their structure; atomic bonding forces and strength of interatomic and intermolecular bonding forces, atomic arrangements in solids, structural imperfections and atom movements in solids; principles of phase diagrams and their application to multiphase materials, with particular reference to the iron-carbon system; mechanical and electrical properties of engineering materials; semiconductors, polymers and ceramics; and their relation to internal structure. *Prerequisite:* (CHEM 1872 or CHEM 1072 or equivalent).

CHE2506   Materials Science Laboratory   1 ch (3L*)

Laboratory experiments are conducted to illustrate behaviour of materials and other concepts covered in CHE 2501. *Prerequisite:* CHEM 1877 or CHEM 1077. *Co-requisite:* CHE 2501.

CHE2525   Fundamentals of Chemical Processes Design 4 ch (3C1T) [W]

Introduces principles of chemical process design strategy and decision making. Fundamental Chemical Engineering concepts such as material and energy balances, thermodynamics, fluid mechanics and materials science are integrated into the design process. Flowsheet preparation, chemical process safety, loss prevention and project planning; codes and standards, responsible care and environmental stewardship. Engineering economics and profitability. *Prerequisites:* ENGG 1003, ENGG 1015. *Co-requisites:* CHE 2004, ME 2413 or CHE 2012; ME 3513 or ME 3511.

CHEMISTRY

CHEM1041   General Chemistry I   3 ch (3C 1T)

Introductory course designed primarily for BSc students. Topics covered include atoms, molecules & ions; stoichiometry; thermochemistry; atomic structure & quantum theory; periodic trends - atomic size, ionization, electron affinity; chemical bonding - Lewis structure, VSEPR, polarity, electronegativity, hybridization, hydrocarbons - alkanes, alkenes, alkynes, nomenclature, isomerism, functional groups. *Prerequisite:* Grade 12 Chemistry or equivalent. *Co-requisite:* MATH 1001 or MATH 1003.

CHEM1046   Introductory Chemistry Laboratory I   2 ch (3L)

A selection of experiments to accompany CHEM 1041. *Co-requisite:* CHEM 1041 or equivalent.

CHEM1072   General Chemistry II   3 ch (3C 1T)

A continuation of CHEM 1041. Topics covered include gas laws & kinetic theory; oxidation & reduction - oxidation numbers, balancing redox equations; equilibria - equilibrium constant K, Le Hotelier's Principle, homo- and heterogeneous equilibria; acid-base equilibria - weak acids and bases, pH, common ion effect, buffers, solubility, selective precipitation; thermodynamics - entropy and free energy; electrochemistry - electrode potentials, galvanic and electrolytic cells, quantitative aspects. *Prerequisite:* CHEM 1041. *Co-requisite:* MATH 1001 or MATH 1003.

CHEM1077   Introductory Chemistry Laboratory II   2 ch (3L)

A selection of experiments to accompany CHEM 1072. *Prerequisite:* CHEM 1046 or equivalent. *Co-requisite:* CHEM 1072.

CHEM1831   What on Earth Isn't Chemistry   3 ch (3C)
(Cross-Listed: SCI 1831)

Intended for students (with limited chemistry background) who wish to gain a better understanding of the chemistry in the world around them. The course will cover aspects of; atomic and molecular structure, the periodic table, what chemical names mean, balancing equations (and the relationships involved), acids and bases, nuclear chemistry, radiation and organic compounds. The concepts will be examined in the context of understanding "everyday" chemistry. This course cannot be used as a substitute for any other first level Chemistry course.

CHEM1872   General Physical and Inorganic Chemistry   3 ch (3C 1T)

Intended primarily for Engineering students who require an introduction to physical and inorganic chemistry. This course may cover thermochemistry, chemical bonding & molecular structure, gases, intermolecular forces & modern materials, chemical equilibria (acid & base, buffer & solubility), chemical kinetics, chemical thermodynamics, electrochemistry, and nuclear chemistry. *Prerequisite:* Grade 12 Chemistry (70%), or CHEM 1041 or CHEM 1831 minimum grade of B.

CHEM1877   General Physical and Inorganic Chemistry   2 ch (3L)

Intended primarily for Engineering students who require an introduction to physical and inorganic chemistry. Laboratory topics may include: colligative properties, recycling, enthalpy, gas laws, WHMIS, titration, kinetics, solubility and corrosion. *Pre- or Co-requisite:* CHEM 1872.

CHEM2009 **Experience in Chemistry Research I** **3 ch (3L) [W]**

CHEM 2009 is a project based course where students conduct research under the supervision of a chosen faculty member. Students must have declared a Science Major and must have CGPA of 3.7 or better to enter after first year or a CGPA of 3.0 or higher to enter after second year. Students will be provided with a list of projects and applicant's names will be forwarded to project supervisors. Applications must be made, by May 15th, to the Saint John Chemistry coordinator who will be in charge of project assignments. Since enrolment may be limited, students are encouraged to plan for alternative courses in the case that no suitable project is available. A minimum of at least 3 scheduled hours per week is required and one seminar presentation will be required at the end of the academic term, as well as a written report. *Prerequisites:* CHEM 1041, CHEM 1046, CHEM 1072 and CHEM 1077.

CHEM2065 **Introductory to Biochemistry** **4 ch (3C 3L*) [W]**
 (Cross-Listed: BIOL 2065)

Protein structure and function, techniques for protein analysis, examples of important proteins, mechanisms and regulations of enzymatic activity, metabolism (basic concepts and design, followed by the study of a few pathways). *Prerequisites:* BIOL 1017, BIOL 1105, BIOL 1205 and CHEM 2421.

CHEM2416 **Organic Chemistry Laboratory I** **2 ch (3L 1T) [W]**

Introduction to experimental (organic) chemistry. Part I. *Prerequisite:* CHEM 1077 *Co-requisite:* CHEM 2421.

CHEM2421 **Organic Chemistry I** **3 ch (3C 1T)**

An introductory course. Topics include bonding, elementary stereochemistry, optical isomerism, functional groups, structure determination, reactions of alkenes and alkynes. *Prerequisite:* CHEM 1072, or for chemical engineering students with CHEM 1872.

CHEM2422 **Organic Chemistry II** **3 ch (3C 1T)**

A continuation of CHEM 2421. Topics include stereochemistry, structure determination, alkyl halides, nucleophilic substitution and elimination reactions and their synthetic utility. *Prerequisite:* CHEM 2421.

CHEM2457 **Organic Chemistry Laboratory** **2 ch (3L) [W]**

A laboratory course involving synthesis and purification of organic compounds, stereochemistry, isolation and structure elucidation of natural compounds (by both qualitative and spectroscopic methods). *Prerequisite:* CHEM 2416. *Co-requisite:* CHEM 2422.

CHEM 2605 **Introduction to Spectroscopy (O)** **4 ch (3C 3L)**

This course examines the fundamental principles underlying electronic, vibrational, and rotational spectra of molecules as well as magnetic resonance, mass spectrometry, optical rotation, etc. Principles of instrumentation will also be studied. Those concepts will then be practically applied in a laboratory setting. *Prerequisite:* CHEM 2421 or permission of instructor.

CHEM3245 **Environmental Chemistry (A)** **4 ch (3C 3L)**
 (Cross-Listed: BIOL 3245)

Course will provide students with a chemical basis for understanding the natural environment and current environmental issues. Topics will include: the composition of the natural environment, the chemistry supporting environmental processes, and the main reactions of natural & anthropogenic chemicals in the atmosphere, water, and soils. **NOTE**: This course may be listed as either BIOL 3245 or CHEM 3245. Credit cannot be obtained for both BIOL 3245 and CHEM 3245. *Prerequisite:* One term of organic chemistry at the 2nd year level.

CHEM3335 **Chemical Management Practices** **1 ch (3*L)**

Overviews some Information systems for Hazardous materials (builds on WHMIS, introduces TDG and GHS). Introduces aspects of chemical inventory management. Emphasis on laboratory ethics (including environmental responsibilities, safe lab practices, reporting). Further work on chemical handling, storage and waste management. *Prerequisites:* CHEM 1077 or equivalent and CHEM 2421 or equivalent. (6 x 3 hour lab sessions)

CHEM3435 **Biomolecules and Primary Metabolism (A)** **3 ch (3C)**
 (Cross-Listed: BIOL 3435)

This course will examine the chemistry, function, biosynthesis and metabolism of primary metabolites. Classes of compounds covered will include carbohydrates, fatty acids, amino acids, peptides, proteins and nucleic acids. **NOTE:** This course may be listed as either BIOL 3435 or CHEM 3435. Credit cannot be obtained for both BIOL 3435 and CHEM 3435. *Prerequisites:* CHEM 2422 and BIOL 2065.

CHEM3909 **Directed Studies in Chemistry (O)** **3 ch**

Gives academically strong students (GPA of 3.3 or higher) an opportunity to pursue directed studies in a specific areas and topics related to chemistry. These studies may involve any of the chemistry disciplines. The content and evaluation of each directed study will be determined through negotiation between a student and the supervising faculty member. The student must have declared a SASE Major and be in at least the second year of their program of study. The course is to be completed in a single term.

CHEM4435 **Biologically Active Natural Products and** **3 ch (3C)**
 Secondary Metabolism (A) (Cross-Listed: BIOL 4435)

This course will examine the biosynthesis, biological activity and ecological significance of secondary metabolites. Topics include: the links between primary and secondary metabolic pathways; an overview of the mechanisms, chemistry and coenzymes involved in the biosynthesis of natural products; the acetate pathway; the Shikimate pathway; the mevalonate and methyl erythritol phosphate pathways; the alkaloids; and chemical ecology. This course maybe listed as either CHEM 4435 or BIOL 4435. Credit cannot be obtained for both CHEM 4435 or BIOL 4435. *Prerequisites:* CHEM 2422 and BIOL 2065.

CHINESE

CHNS1203 **Introduction to Chinese I** **3 ch**

This introductory course acquaints students with some of the fundamentals of Modern Standard Chinese (Mandarin) and provides basic oral communication skills. **NOTE**: Closed to students with any knowledge of Chinese.

CIVIL ENGINEERING

A grade of C or higher is required in all Civil Engineering courses.

CE2023 **Mechanics of Materials** **5 ch (3C 3L)**

Elastic and plastic stress, strain; behaviour of beams and columns, torsion; material strength. *Prerequisite:* APSC 1023. *Co-requisite:* MATH 1013.

CE2033 **Structural Analysis** **5 ch (3C 3L)**

Influence lines for beams and trusses; analyses of indeterminate structures including approximate, classical, moment distribution, and numerical methods. *Prerequisite:* CE 2023.

CE2113 **Soil Mechanics I** **4 ch (3C 3L*)**

Soil properties, seepage, effective stress, consolidation, shear strength. *Prerequisites:* GEOL 1044, CE 2023. *Co-requisite:* CE 2703.

CE2703 **Introduction to Fluid Mechanics** **4 ch (3C 1T)**

Physical properties of liquids and gases, fluid statics, kinematics of fluid flow, energy considerations in steady flow, momentum and dynamic forces in fluid flow, fluid measurements, introduction to forces on immersed bodies. *Prerequisites:* APSC 1023 and MATH 1013.

CE2913 **Numerical Problem Solving** **4 ch (3C 2L)**

An introduction to the application of numerical methods and statistical techniques to the solution of civil engineering problems. Introduction to the systems approach and system analysis terminology. Numerical solution of civil engineering problems using root finding, interpolation, integration, and the solution of systems of algebraic equations. Introduction to the numerical solution of ordinary and partial differential equations. Techniques such as multiple linear regression, stepwise regression, time series analysis, nonparametric tests, and optimization are applied to the design and operation of civil engineering systems. *Prerequisites:* CMPE 1003 or CS 1003, STAT 2593, MATH 1503, MATH 2513.

CE2973 **Civil Engineering Design I** **3 ch (2C 2L) [W]**

Continued development of communication skills used by engineers through the application of the design process to meet a well-defined set of requirements and constraints. Communication aspects emphasized include graphical representation of designs, formalized design calculations, and the development of project schedules and estimates. Design aspects emphasize the generation, iteration and analyses of alternatives. Credit will not be given for both this course and CE 3973. *Prerequisites:* ENGG 1003, ENGG 1015.

CLASSICS AND ANCIENT HISTORY

CLAS1005 **Ancient History: Greek and Roman People** **3 ch**

An introduction to the history of ancient Greece and Rome through famous and lesser known individuals. This course is designed to introduce students to historical inquiry and techniques through the study of antiquity.

CLAS1501   **Greek Myth and Religion**   3 ch

An introduction to the divine and heroic myths and to the religion of the Greek world. There will also be consideration of the various approaches to the interpretation of myths.

CLAS1502   **Roman Myth and Religion**   3 ch

An introduction to the divine and heroic myths and to the religion of the Roman world. There will also be consideration of the various approaches to the interpretation of myths.

CLAS2601   **Ancient History: The Romans (A)**   3 ch (3C)

A survey of the social, cultural, intellectual, and political history of the ancient Roman world from the founding of Rome to the fall of the western empire. *Prerequisites:* One term-course in CLAS or HIST.

CLAS2603   **Ancient History: The Rise of Christianity**   3 ch (3C) [W]
The history of the early Christian church from its beginnings in Galilee and Judea to Constantine's formal embrace of Christianity in the fourth century. *Prerequisite:* One term-course in CLAS or HIST.

CLAS3204   **Ancient History: The Julio-Claudian Dynasty**   3 ch (3C) [W]

The social, cultural, intellectual, and political history of the Roman Empire under Tiberius, Caligula, Claudius, and Nero. *Prerequisites:* Twenty term-courses in any discipline.

CLAS3205   **Ancient History: Josephus and the**   3 ch (3C) [W]
                 Jewish Wars (O)

A study of Josephus' account of the history of the Jewish people from the Maccabean revolt to the fall of Masada. Special attention will be paid to Josephus' historiographical methods and to the social, cultural, intellectual, and political context of the period. *Prerequisite:* Twenty term-courses in any discipline.

COMMUNICATION STUDIES

COMS1001   **History of Communication**   3 ch (3C) [W]

A survey of the great revolutions in human communication of speech, literacy, printing and electronic communication. Examines how new media of communication come into being, their impact on earlier forms of communication, their impact on society, and the influence society and culture have on communication technologies. Credit can only be obtained for one of COMS 1001 or ICS 1001.

COMS1002   **Media, Truth and the Social Sphere**   3 ch (3C) [W]
This course serves as a basic introduction to the social, cultural, political, economic and technological aspects of communication. Particular attention is paid to media representations of modern social life and conceptions of and their presentations of "truth". Credit can only be obtained for one of COMS 1002 or ICS 1002.

COMS2001   **Transformations in Media**   3 ch (3C) [W]

This course will explore the nature and evolution of media since the development of the Internet. The course will provide students with a framework for thinking about media institutions and technologies. Credit can only be obtained for one of COMS 1002 or ICS 1002.

COMS2101 Popular Music, Culture and Communication (O) 3 ch (3C) [W]

A general introduction to the study of Western popular music as both a cultural industry and as a form of communication which presents students with an overview of post-war popular music genres from rock n' roll to contemporary dance music. Credit can only be obtained for one of COMS 2101 or ICS 2101.

COMS2103   **Understanding Comics and Manga**   3 ch (3C)

This course will focus on the study of comics and manga (Japanese comic books and graphic novels). Students will analyze the history of comics and the industry in both North America and Japan. Particular emphasis will be placed on issues pertaining to: gender, culture, readership, characterizations, artwork, fan communities, and creative workers. Credit can only be obtained for one of COMS 2103 or ICS 2103. *Prerequisite:* None.

COMS2119   **Digital Storytelling**   3 ch (3C)
This course will offer students a hands-on introduction to New Media Production through Digital Storytelling. Combining classroom lectures, computer lab time, hands-on filming and audio recording experience, this courses provides students with experience in creating rich digital narratives while exploring topics related to the development of new media. Students will gain practical experience with a variety of digital tools.

COMS2201   **Health Communications**   3 ch (3C)
              (Cross-Listed: HEAL 2201)
Health communication is the study of messages that create meaning in relation to physical, mental, and social well-being. Interdisciplinary

research is conducted in the scientific, interpretive (humanities) and critical-cultural traditions.
This course examines theories of interpersonal., organizational, and mass communication relevant to a variety of professionals in the health field. Students will review theories and contexts of communication (interpersonal, organizational, mass, social media and intercultural), relations of power in communication settings, strategies of persuasions, the relationship between attitudes and behaviour, and the importance of representation in our understanding of changing the nature of health, health delivery and health issues in society.
Students cannot take both COMS 2201 and HEAL 2001. Students in the Bachelor of Health cannot take COMS 2201.

COMS3001   **Contemporary Communication Theory**   3 ch (3C) [W]

This class focuses on theoretical approaches to studying political, social and cultural implications of communication processes, contexts and technologies.
Students will explore both historical and contemporary approaches to the field, emphasizing the relevance of theory to our digital and everyday lives. Credit can only be obtained for one of COMS 3001 or ICS 3001. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor. This course is open to students registered in the Certificate in Social Media program regardless of the stated prerequisites.

COMS3003   **Electronic Research**   3 ch (3C) [W]

This course provides students with an advanced introduction to conducting web-based research and the use of electronic research tools. Credit can only be obtained for one of COMS 3003 or ICS 3003. *Prerequisite:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3004   **Media Production: Audio**   3 ch (3C)

Introduction to production techniques related to radio and web podcasting. Students will explore aspects of production through individual and group projects as well as in class presentations. Credit can only be obtained for one of COMS 3004 or ICS 3004. *Prerequisite:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3005   **Intellectual Property and the**   3 ch (3C) [W]
              Information Commons

This course will explore the emerging importance of copyright as a pertinent regulatory issue facing both the communication industries and western society. We will examine the development of copyright and its transformation as a result of technological, economic and cultural changes in the global cultural industries. Credit can only be obtained for one of COMS 3005 or ICS 3005. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3006   **Media Production: Video**   3 ch (3C)

Introduction to video production techniques. Students will explore aspects of production through individual and group projects as well as in class presentations. Credit can only be obtained for one of COMS 3006 or ICS 3006. *Prerequisite:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3008   **DIY Media**   3 ch (3C) [W]

New technologies and do it yourself (D.I.Y) culture have a long, intertwined history. This class will examine the origins, technologies, techniques and representations of D.I.Y in contemporary culture. Students will examine "lofi" practices such as circuit bending, hardware hacking and tinkering as forms of culture and communication. *Prerequisite*: Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3101   **Special Topics in Communications Studies**   3 ch (3C) [W]

Exploration of specialized topics in media studies, technology and society, or communication policy issues. Credit can only be obtained for one of COMS 3101 or ICS 3101. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3102   **Gender, Media and Communication**   3 ch (3C) [W]

This course will focus on the salience of gender in understanding media and communication. Course topics may include a focus on gender and the following: production, media texts, (TV shows, movies, anime, blogs, forums, comic books, video games, etc.) reception of media, content, communication technologies, and communication practices. Credit can only be obtained for one of COMS 3102 or ICS 3102. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3103   **Mediated Networked Publics:**   **3 ch (3S) [W]**
Digital Media & Network Technologies in Everyday Life

Network technologies and digital media are now part of our everyday lives. With a focus on our own media engagement, this course examines the way that social and cultural shifts influenced by these technologies that have transformed our relationships, cultures, practices, and workplaces. Credit can only be given for one of ICS 2102, COMS 2102 or COMS 3103. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor. This course is open to students registered in the Certificate in Social Media program regardless of the stated prerequisites.

COMS4001 Research Seminar in Communications Studies 3 ch (3S) [W]

This seminar provides majors with the opportunity to do basic research in an area of special interest. Credit can only be obtained for one of COMS 4001 or ICS 4001. *Prerequisites:* COMS 3001, COMS 3003.

COMS4003   **Advanced Communication Analysis**   **3 ch (3C)**

Course lectures and hands- on lab experience will guide students through the use of analytic tools and critical evalution in the practical design and evaluation of online digital content. Using industry standard tools and established contemporary media-monitoring methods, students will gain practical experience creating, measuring and analyzing digital data. *Prerequisites:* This course is open to students registered in the Certificate in Social Media program or by permission of the instructor.

COMS4101   **Advanced Topics in Communications Studies 3 ch (3S) [W]**

An advanced seminar in media studies, technology and society, or communication policy issues. Credit can only be obtained for one of COMS 4101 or ICS 4101. *Prerequisites:* COMS 3001 and COMS 3003, or permission of the instructor.

COMS4103 Independent Study in Communications Studies 3 ch (3S) [W]

This course provides an opportunity for students to engage in directed study of contemporary issues and debates in the fields of communication and media. Credit can only be obtained for one of COMS 4103 or ICS 4103. *Prerequisites:* COMS 3001 and COMS 3003, and permission of the instructor.

COMS4104   **Promotional Culture**   **3 ch (3C) [W]**

Promotional culture is central to our lives. Not merely in marketing, advertising and politics, but also the ways in which we interact to promote ourselves, our practices, and our tastes through traditional and social media. This course examines both the history of advertising and modern branding culture in our quest to understand the medicated promotionalism.

The course critically examines the social practices involved in promotionalism and is focused on the role of different media of communication in these processes. *Prerequisites:* This course is open to students registered in the Certificate in Social Media program or by permission of the instructor.

COMS4119   **Advanced Communication Presentation**   **3 ch (3C)**
Techniques

Despite the myriad of possibilites that digital communication technologies afford with regard to persuasion, oral presentation skills continue to be paramount in the workplace. Indeed, it is the combination of these that is often the most effective. In this class, students will become proficient in a variety of digital presentation platforms and applications, with the practical goals of clear and persuasive communications. Course lectures and hands-on experience with these technologies and rhetorical techniques will equip students with advanced presentation compentencies. *Prerequisites:* COMS 3001 and 4104.

COMS5004   **Advanced Communications Portfolio I**   **3 ch (3C)**
The first of two classes in which students will produce media for and curate portfolio representative of their accumulating competencies with regard to social media. Beyond these practical skills, the students will begin to think about positioning the repsective pieces theoretically and critically. *Prerequisites:* Pre/corequisites: COMS 1002, 2119, 3001 and 4104. This course is only open to students registered in the Certificate in Social Media program.

COMS5006   **Advanced Communication Project Portfolio**   **3 ch (3C)**
The second and final of the two classes in which students will produce media for an curate a portfolio representative of their accumulating competenciers with regard to social media. Beyond these practical skills, the students will position the respective pieces of theoretically and critically in a final written project. *Prerequisites:* COMS 5004. This course is only open to students regisetered in the Certificate in Social Media program.

COMPUTER ENGINEERING

A grade of C or higher is required in all Computer Engineering Courses.

CMPE1003   **Programming and Problem Solving**   **4 ch (3C 3L*)**
for Engineers

Introduction to the use of digital computers for problem solving and communicating solutions. Covers use of procedures, decisions, loops and arrays focusing on scientific and engineering problem analysis, algorithm design, and program structure. Also includes organizing, tabulating, and graphing program output with different software tools to communicate results. This course uses both MATLAB and Python programming languages. NOTE: Credit will not be given for both CMPE 1003 and CS 1003. *Co-requisites*: MATH 1003 or MATH 1001 and MATH 1503.

CMPE1023   **Data Structures and Algorithms for Engineers**   **4 ch (3C 2L)**

Introduction to the ideas of abstraction of procedures and data. Implementation and handling of the fundamental data types: lists, stacks, queues, and graphs. Basic concepts of discrete mathematics, elements of combinatorics, aspects of complexity and recursion and algorithm development, including estimation of program resource utilization. This course is taught using the C programming language. NOTE: Credit will not be given for both CMPE 1023 and CS 1023. *Prerequisite:* CMPE 1003 or CS 1003.

COMPUTER SCIENCE

The [P] designation identifies courses that involve significant programming work assigned to each individual student. The programming component involves substantive feedback and guidance to develop and improve programming skills. For elective courses, the programming component goes beyond the skills a CS student can be expected to achieve as part of their core courses.

CS1003   **Programming and Problem Solving**   **4 ch (3C 1.5L*)**
for Engineers

Intended for Science, Applied Science and Engineering students. Introduction to the use of digital computers for problem solving and communicating solutions. Covers use of procedures, decisions, loops and arrays focusing on scientific and engineering problem analysis, algorithm design, and program structure. Also includes organizing, tabulating, and graphing program output with different software tools to communicate results. This course is currently taught primarily in Python. NOTE: Credit will be granted for only one of the following courses: CMPE 1003, CS1003, CS 1063, CS1073, or IT 2733. This course may not be taken for credit by BCS or BScCS or BScSwE students. *Co-requisites*: (MATH 1003 or MATH 1001) and MATH 1503.

CS1023   **Data Structures and Algorithms**   **4 ch (3C 2L)**

Intended for Science, Applied Science, and Engineering Students. Introductions to the ideas of abstraction of procedures and data. Handling of the fundamental data types: lists, stacks, queues, and graphs. Basic concepts of discrete mathematics, elements of combinatorics, aspects of complexity and recursion and algorithm development, including estimation of program resource utilization. NOTE: This course may not be taken for credit by CS students. *Prerequisite:* CS 1003.

CS1063   Introduction to Computer Programming in Python   3 ch (2C 1L)
Python is a modern scripting language widely used in AI, web applications, and interactive games, as well as in scientific computing and data analysis. This course is intended for students with no prior programming experience. Coverage: variables, conditionals, iteration, functions, classes, modules, types including arrays, lists, tuples and dictionaries, selected features available in the standard libraries. NOTE: This course cannot be taken for credit by students pursuing computer science degrees, majors, or minors. Credit will be granted for only one of the following courses: CMPE 1003, CS 1003, CS 1063, CS 1073, or IT 2773. *Prerequisite:* High School Mathematics.

CS1073   Introduction to Computer Programming I   4 ch (3C 1.5L 1T) [P]
(in Java)

Covers fundamental concepts such as decisions, loops, arrays, classes, methods, and inheritance; focusing on problem analysis, algorithm design, program structure and readability. Introduction to the Java API libraries. NOTE: Credit will be granted for only one of the following courses: CMPE 1003, CS 1003, CS 1063, CS 1073, or IT 2773. *Prerequisite:* High School Mathematics.

CS1083   Introduction to Computer Programming II   4 ch (3C 1.5L 1T) [P]
(in Java)

Continues CS 1073 focusing on problem analysis, algorithm design, program structure and readability. Covers recursion, sorting and searching, data abstraction, encapsulation, inheritance, polymorphism, simple data structures and files, testing and debugging. NOTE: Credit will not be granted for both CS 1083 and CS 2616. *Prerequisite:* (CS 1073 with a grade of C or better) or (IT 2773 with a grade of C or better, and High School Mathematics or MATH 1863 or permission of the instructor).

CS1103   **Introduction to Databases**   **4 ch (3C 2L)**

Topics include: Motivation for and capabilities of database management systems; the role of databases in a three-tier application architecture; relational data model; relational algebra; functional dependencies and normalization; SQL language, including creating, loading, updating, modifying, and querying database tables; data integrity, security and privacy; entity relationship data modeling; CRUD analysis; stored procedures; accessing a database using an API such as JDBC; brief introduction to advanced topics such as data warehouses, big data, and XML. NOTE: Credit is only given for one of CS 1103 and INFO 1103. *Prerequisite:* CS 1073.

CS1303   **Discrete Structures**   **4 ch (3C 1T)**

Introduces topics in discrete mathematics important in computer science, including: propositional logic, predicate logic using quantifiers, direct and indirect proofs, summation and product notation, mathematical induction, elementary set theory and counting. Students are expected to write mathematical proofs throughout the course. NOTE: Credit will not be given for both CS 1303 and MATH 2203. Students majoring in Mathematics or Statistics must choose MATH 2203. *Prerequisite:* High School Mathematics.

CS2043   **Software Engineering I**   **4 ch (3C 2L)**

Introduction to fundamentals of the discipline of software engineering with focus on the software development life cycle. Topics include software development methodologies and processes, requirements, analysis, modeling, architecture, design, implementation, testing, and maintenance. Basics of software management are also introduced. NOTE: Credit is not given for both CS 2013 and CS 2043. *Prerequisite:* CS 1083.

CS2113   **Scientific Computing (O)**   **4 ch (3C)**

An introduction to numerical techniques for solving scientific problems. Topics to include sequences, series, structured linear systems, polynomial models, quadrature, differential/difference equations and root finding. Use of existing numerical software packages and a basic introduction to scientific programming using a high-level language. *Prerequisites:* MATH 1013 and one of CS 1073, IT 2773 or CS 1003.

CS2253   **Machine Level Programming**   **4 ch (3C 2L) [P]**

Introduces students to lower-level computer operations and the association with higher-level procedural programming constructs. Topics include binary representation of data, instruction formats and execution, assembler programming, scope, functions, user-defined data types using both low- and high-level programming languages. *Prerequisite:* CS 1303 or permission of instructor. *Co-requisite:* CS 2263 or CS 2617.

CS2263   **Systems Software Development**   **4 ch (3C 2L) [P]**

This course examines program development and supporting tools, using the C language. Topics include: organization of programs into procedural components, multi-file program organization, inter-file type checking, and development, maintenance and performance techniques. Software tools for program development such as compilation/linking, building, debugging, version control, profiling and tracing are included. *Prerequisite:* CS 1083.

CS2333   **Computability and Formal Languages**   **4 ch (3C 1T)**

This course introduces students to some of the fundamental ideas in theoretical computer science: functions and relations, formal languages, finite automata, regular languages, context-free grammars, context-free languages, push-down automata, pumping lemmas, Turing machines, the Church-Turing thesis, recursive and recursively enumerable languages, the Chomsky hierarchy, the halting problem and other unsolvable decision problems, problem reducibility, and fundamental computational complexity classes. *Prerequisites:* CS 1073, CS 1303, and 30 ch.

CS2383   **Data Structures and Algorithms**   **4 ch (3C 1T) [P]**

Presents formal specifications of abstract data and their data structure representations, operations, and algorithms. Includes priority queues, dictionaries, graphs, heaps, hash tables, binary search trees, balanced trees, and graph adjacency representations. Covers sorting, searching, dynamic storage handling, and fundamental graph algorithms. Asymptotic analysis of time and space complexity are taught and used throughout the course. Students are expected to implement a variety of data structures and graph algorithms. NOTE: Credit is not given for both CS 2383 and CS 3323. *Prerequisites:* CS 1083 and CS 1303.

CS2616   **Java for Programmers**   **1 ch (2C) [P]**

Basic language constructs (input/output, variables and types, control structures.) Object oriented concepts, such as classes, objects, attributes and methods. Programming with multiple classes. This course is given over an 8 week period as follows: 2 hours/week for 3 weeks followed by midterm test plus 2 hours/week for 3 weeks followed by final examination. Course drop date is one week after the midterm test. NOTE: Credit will not be given for both CS 1083 and CS 2616. *Prerequisites:* Two term-courses (at least 6 ch) in programming, excluding CS 1083.

CS2617   **C/C++ for Java Programmers (O)**   **1 ch (2C) [P]**

Basic language constructs (input/output, variables and types, control structures), classes, pointers, and preprocessor. This course is given over an 8 week period as follows: 2 hours/week for 3 weeks followed by midterm test plus 2 hours/week for 3 weeks followed by final examination. Course drop date is one week after the midterm test. NOTE: Credit will not be granted for both CS 2617 and CS 2263. *Prerequisites:* CS 1083 or CS 2616, or equivalent.

CS2704   **Data Analytics using Python**   **4 ch (3C 1L) [P]**
               (Cross-Listed: DA2704) (A)

This course teaches data-driven problem solving. Starting from installing a Python programming environment, students will learn reading data, producing graphs, hypothesis testing and Bayesian statistics with hands-on programming experience. The course is also a stepping stone to more advanced subjects, such as machine learning and AI. Although no prior programming experience is required, there is a substantial programming component to the course. *Prerequisite:* STAT 1793 or STAT 2593 or STAT 2263 or BA 1605 or PSYC 2901.

CS2714   **Text Analytics (Cross-Listed: DA2714) (O)**   **3 ch (3C)**

Introduction to the analysis of textual data with a foundation on natural language processing and computational linguistics. Students will learn to develop information extraction pipelines and evaluate performance. *Prerequisites:* DA 2704, CS 1083, CS 1103

CS2803   **Logic Design**   **4 ch (3C 2L*)**

Switching algebra and its application in analysis and synthesis of combinational and clocked sequential circuits; minimization and realization methods. Universal logic gates, error detection and correction, register and counter operations, and memory systems. NOTE: Credit will not be given for both ECE 2214 and CS 2803. *Prerequisite:* CS 1003 or CS 1073.

CS2998   **Programming Project**   **4 ch [P]**

This individual study course provides an opportunity for students to learn programming languages that are not otherwise part of their degree program. The students first teach themselves a programming language, approved by the department, and then develop a program using this language. This is done under the supervision of a faculty member. A presentation of the program developed is required. NOTE: the course may not be taken for credit by BScCS or BCS students. *Prerequisite:* Approval of the Department.

CS3033   **Software Design and Development (A)**   **4 ch (3C)**

Further coverage of the requirements analysis, software architecture and design phases started in CS2043. Focus on design principles and evaluation, advanced techniques for object-oriented analysis and design, design patterns, component-based and product-line approaches. *Prerequisite:* CS 2043.

CS3113   **Introduction to Numerical Methods (O)**   **3 ch (3C)**

Error analysis, convergence and stability. Approximation of functions by polynomials. Numerical quadrature and differentiation. The solution of linear and non-linear equations and the solution of ordinary differential equations. Emphasizes the development of computer algorithms and stresses the influence of finite precision and arithmetic on computational results. NOTE: Credit will be granted for only one of CE 2913, CS 3113, MATH 3414, or ECE 2412. *Prerequisites:* (CS 1003 or CS 1073, MATH 1013) or CS 2113, and MATH 1503 or MATH 2213.

CS3123   **High Speed Computing (O)**   **4 ch (3C 2L*) [P]**

This course will discuss the building blocks required for undertaking parallel computation on shared memory architectures. Differences between programming on shared memory multiprocessors and distributed memory processors will be discussed. Software will include performance analysis tools and message passing libraries such as Open MP and MPI. *Prerequisite:* CS 2263 *Co-requisite:* CS 3403.

CS3403   **Operating Systems**   **4 ch (3C 2L*) [P]**

This course examines the fundamental role of an operating system. Topics covered are: process/threads, process management, process synchronization, CPU scheduling, storage management, I/O management, security and user interfaces. Examples are drawn from contemporary operating systems. *Prerequisites:* CS 2253, (CS 2263 or CS 2617) and 70 ch completed.

CS3423   **Data Management (A)**   **4 ch (3C) [P]**

Discussion of selected topics at an advanced level concerning the storage and manipulation of large volumes of data outside of a conventional relational database or statistical package. Covers select NoSQL technologies. *Prerequisites:* CS 1103 and 70 ch completed. CS 2704 is recommended

299

CS3553 **Introduction to Bioinformatics** **4 ch (3C)**
(Cross-Listed: BIOL 3553)

Even before the completion of the Human Genome Sequencing Project biomedical databases have stored massive amounts of DNA and protein sequence information that have been analysed and reused in biomedical studies. Today the underlying technologies and analytical tools supporting genomic data analysis make up the field known as Bioinformatics. This course will introduce core topics and tools in genomics and bioinformatics explained from a practical perspective. Students taking this course will receive hands on training in many of the following areas of study: Genome Sequencing techniques, Gene Prediction, Sequence Alignment, Sequence Databases, Genome and Protein Structure Annotation, Bioinformatic Visualization Techniques, Gene Ontology, Analysis of Scientific Literature, Biomedical Text Mining, Workflow Management Systems, Bioinformatics Web Services. *Prerequisite:* 60 credit hours completed in a BSc (Biology, Marine Biology, Environmental Biology, or Biology-Psychology) or in a BScCS, or permission of the instructor.

CS3619 **Programming Languages** **4 ch (3C 1T)**

Structure and major characteristics of programming languages; formal definition, syntax, semantics. Comparative study of principal language concepts and their treatment in imperative, functional, logic, and object-oriented languages. **NOTE:** Credit will be granted for only one of CS 3619 or CS 4613. *Prerequisites:* CS 2333, CS 2043, (CS 2263 or CS 2617), CS 2383.

CS3769 **Knowledge Representation (O)** **3 ch (3C)**

This course introduces the processes and principles supporting the formal representation of knowledge. The course will introduce the knowledge elicitation process, formalization of knowledge in ontologies, axioms and rules and outline the logical underpinnings of these formalisms including first order logic and description logics. Students will create ontologies and learn to use reasoning engines for the purpose of deriving domain specific insights through inference and reasoning. Applications of knowledge representation techniques in support of the semantic web will be illustrated. *Prerequisites:* CS 3773, CS 2043, CS 1083, CS 1103, CS 2333.

CS3773 **Topics in Web Science (O)** **4 ch (3C)**

Web science integrates computer information sciences with multiple aspects of social sciences. Web Science is concerned with the socio-technical aspects of the World Wide Web. Understanding the web requires analysis of its architecture and applications, the people, organizations, policies and economics that are affected by it and impact it. This course will explore the history of the Web and how evolution of metadata representation standards have resulted in a smarter web. Students will primarily do a hands-on data analytics project using Open Data, Linked Data and SPARQL endpoints available on the web. *Prerequisite:* 70 ch completed or permission of the instructor.

CS3813 **Computer Architecture and Organization** **4 ch (3C 2L*)**

Advanced concepts in assembly language programming, functional organization of a computer system, organization of CPU, organization of I/O, interrupts, memory organization, cache and virtual memories, performance enhancements, pipelining, superscalar processors and embedded systems. *Prerequisites:* (ECE 2214 and ECE 2215) or CS 2803, and CS2253.

CS3893 **Computer Networking** **4 ch (3C)**

This course provides an in-depth look at the hardware and software behind the Internet and other computer networks. Topics include OSI network architecture, communication protocols, UDP and TCP, socket programming, common application-level protocols, congestion control, routing protocols, Internet Protocol, link layer services, network security. *Prerequisite:* CS 2253. *Co-requisites:* (ECE 2214 and ECE 2215) or CS 2803.

CS3913 **Algorithmics** **4 ch (3C)**

Continues the study of algorithms begun in CS 2383. Covers advanced techniques for analyzing recursive algorithms, examines major algorithm-design approaches including greedy, divide and conquer, dynamic programming, and graph-based approaches. Considers randomized algorithms and introduces complexity theory, including NP-completeness. One or more advanced topics will be chosen from the following areas: algorithmic problems arising in artificial intelligence, state spaces and search strategies, parallel and distributed algorithms. *Prerequisites:* CS 2383 and CS 2333.

CS3983 **Professional Practice** **4 ch (3C) [W]**

Covers social context of computing, professional and ethical responsibilities, risks and liabilities of computer-based systems, intellectual property, privacy and civil liberties, and professional certification by the Canadian Information Processing Society. Instructs students in the preparation of technical reports in Computer Science.

Involves an independent study component resulting in a technical report, typically a survey paper. Requires preparation of a project plan that could be used for CS 4980, CS 4982 or CS 4993. Covers basic writing, oral presentation and library skills. *Prerequisite:* 12 ch of CS courses at the 2000-level or higher, and either completion of the BScCS Arts Writing Core Requirements or exemption from the Requirement.

CS4033 **Software Project Management and** **4 ch (3C)**
Quality Assurance (A)

Discusses the "umbrella" activities in software development: project planning and monitoring, risk management, quality assurance through reviews and testing (including reliability and safety, and test automation), and the management of technical debt. Emphasis is put on software metrics and their use in quantitative management. Introduces concepts in software process improvement. *Prerequisite:* CS 2043.

CS4083 **Leading-Edge Technology in** **4 ch (3C)**
Software Development (O)

Selected topics in software engineering at an advanced level. Content will vary. Topics will be posted on the department web site at least one month prior to the beginning of the course. One of the goals of this course is to prepare students for life-long learning, through reading papers from the literature and discussing them in class. *Prerequisite:* CS 3033.

CS4093 **Team Software Development Project (O)** **4 ch (3C) [P]**

The application of sound software engineering techniques to a problem in a practical setting. This course involves a relatively large software project, done in a team (with proper team management). A real "client" shall be involved, from whom the requirements have to be gathered, and to whom quality product and documentation have to be delivered. This course is normally completed during the student's final year of study. *Prerequisites:* CS 3033 and permission of instructor.

CS4103 **Parallel Programming with MPI (O)** **4 ch (3C) [P]**

Explores the design and analysis of parallel algorithms on distributed and hybrid computing clusters. Development work on local and remote computing platforms with a high level computing language and message passing libraries such as OpenMP and MPI will provide the core of the course. *Prerequisite:* CS 3123.

CS4123 **Topics in High-Performance Computing and** **4 ch (3C)**
Visualization (O)

Advanced level discussions chosen from current research topics in computation techniques, high-performance computing or visualization. The course will involve presentations and written reports. *Prerequisites:* CS 3123 and CS 3813.

CS4403 **Data Mining (Cross-Listed: DA 4403)** **4 ch (3C 1L)**

Data Mining (aka knowledge discovery) is an interdisciplinary area of computer science with the goal of extracting new knowledge and insights from big and complex data sets. The course introduces essential pattern recognition methodologies leveraging machine learning and rule-based techniques. Supplementary tasks involving processing, cleaning, integration, and transformation of data are also covered. An etymology of data mining is provided to help students compare and contrast knowledge discovery with contemporary data analytics and decision support methodologies. *Prerequisites:* CS 1103, CS 2704 and (STAT 2593 or STAT 2793).

CS4525 **Advanced Database Management Systems (A)** **4 ch (3C 2L*)**

Continues the study of databases begun in CS 1103, with a focus on the internal workings of modern relational database systems. Topics include: file systems and structures, advanced query languages, query optimization, concurrency control and recovery, security and integrity, systems for Big Data processing including the Map/Reduce framework and related Apache projects. *Prerequisites:* CS 1103, CS 2383, and 70 ch completed. CS 2704 is recommended.

CS4553 **Biomedical Informatics (O)** **3 ch (3C)**

Biomedical informatics is the application of the science of information to problems of biomedical interest, dealing with knowledge representation and the storage, retrieval, and optimal use of data for problem solving and decision making. This course covers infrastructures and algorithms developed specifically to generate insights required at the point of care, including dedicated healthcare surveillance routines, and in health research studies. Using numerous case studies, the course will outline how biomedical data generated for primary purposes is integrated for reuse with artificial intelligence techniques. Students will do data analytics projects using biomedical data sets and develop algorithms targeted for clinical decision support. *Prerequisites:* CS 3553, DA 4403 or CS 4795

CS4713 **Fundamentals of Simulation (O)** **4 ch (3C 1T)**

Systems and model. The simulation process. Random number generation. Introduction to queues, computer modeling of discrete systems using appropriate languages, computer modeling of continuous systems, model validation and experiment planning. Case studies from a variety of disciplines. *Prerequisites:* CS 1083, (CS 3113 or equivalent), (STAT 2593 or STAT 1793).

CS4783 **Web: Semantics, Services and Solutions (O)** **4 ch (3C)**

This course outlines the World Wide Web and focuses on the technologies and innovations that are driving its evolution. It introduces the W3C endorsed Semantic Web technologies and looks at the migration of the syntactic web to the semantic web and subsequent generations. Key topics explored are knowledge engineering; OWL ontology reasoning; text mining and natural language processing tools; web services and workflow technology, as well as end-user interaction in web search. *Prerequisites:* CS 1083, CS 2383, CS 3773, and CS 1103.

CS4795 **Artificial Intelligence** **4 ch (3C 2L*)**

Introduction to intelligent agent design, problem solving using search techniques, the use of mathematical logic for knowledge representation and reasoning, decision making under undercertainty, machine learning techniques. Applications of AI to health care will be discussed. Note: Credit will not be granted for both CS 4795 and CS 4725. *Prerequisites:* CS 2333 and CS 2383.

CS4843 **Wireless and Mobile Computing (A)** **4 ch (3C)**

Wireless communication technology, fading and line-of-sight propagation, antennas, signal encoding, spread spectrum and wireless networking. Cellular system, cell coverage, mobile data communication, mobile IP and WAP. The course will also cover IEEE wireless standards, Bluetooth and other related topics for networking. *Prerequisite:* CS 3893.

CS4893 **Network Programming (A)** **4 ch (3C 2L*) [P]**

Threads, socket programming (client & server), secure sockets, multicast sockets, protocol handlers, content handlers, RMI, Mail API and social networks. Uses Java programming language. *Prerequisites:* CS 1083 and CS 3893.

CS4973 **Independent Study in Computer Science** **4 ch [W]**

This course will provide the student with practical experience in their area of study. Under the supervision of a faculty member, the student will explore topics not available in the regular course offerings. The course may contain written assignments, written tests, or relevant work experience. A written report and oral presentation are required. Students must identify a faculty member who is willing to supervise the course and apply to the co-ordinator of the course for approval prior to the term in which they wish to undertake the work. Applications are normally approved only for students who are in their final year of the programme, and who have obtained a grade point average of at least 3.0 in work of the second and third years. *Prerequisite:* Approval of the Department.

CS4980 **Fourth Year Technical Report** **4 ch (1S*) [W]**

Builds on the skill developed in CS 3983, through the preparation and presentation of a technical report. The report normally involves a design or implementation project undertaken as part of the course, and it may be expressed either as a traditional formal written document, or, at the instructor's discretion, as an extended slide deck. Students are required to attend certain department and faculty talks, and they must attend sessions on writing and/or library research skills. Additional course regulations are available from the Department. **NOTE:** Credit will be granted for only one of CS 4980, CS 4982, CS 4983, or CS 4993. *Prerequisite:* CS 3983.

CS4982 **Technical Report** **4 ch (1S*) [W]**

Builds on the skills developed in CS 3983, through the preparation and presentation of a technical report. The report normally involves a design or implementation project undertaken as part of the course, and it may be expressed either as a traditional formal written document, or, at the instructor's discretion, as an extended slide deck. Students are required to to attend certain department and faculty talks, and they must attend sessions on writing and/or library research skills. Additional course regulations are available from Department. A topic approved by the Department must be chosen before the term begins. Changes to the project plan developed in CS 3983 must be approved before the beginning of term. Note: credit will be granted for only one of CS 4980, CS 4982, CS 4983 or CS 4993. *Prerequisite:* CS 3983.

CS4993 **Honours Project** **6 ch [W]**

The student submits a detailed proposal, schedule, progress reports and written reports to the thesis coordinator with the supervisor's approval. A formal presentation of the thesis is required. Planning of the thesis is done prior to the the beginning of the term. Detailed guidelines are available

from the Department. Note: Credit will be granted for only one of CS 4980, CS 4982, CS 4983, or CS 4993. *Prerequisite:* CS 3983.

CS4998 **Directed Studies in Applied Computer Science** **4 ch (3S)**

This course permits students and faculty to explore inter-disciplinary areas of research in relation with computers in Arts, Science, and Business programs. In some cases, the faculty members will offer directed studies to groups of students. In other instances, individual students will seek this course on a one-on-one basis. *Prerequisites:* Approval of the CS department and at least 90 ch completed. Recommended that students have taken a first- or second-year course in CS or IT.

CS4999 **Directed Studies in Computer Science** **4 ch (3S)**

This course permits Computers Science students and faculty to explore various areas of Computer Science. In some cases, the faculty members will offer directed studies to groups of students. In other instances, individual students will seek this course on a one-on-one basis. *Prerequisites:* Department approval and at least 90 ch completed.

DATA ANALYSIS

DA2503 **Packaged Software Decision Aids** **4 ch (3C 1T)**

Examines typical software packages present in information centres and other business environments. Includes selected topics from the following areas: operating systems; network administration; communication software; word processing; spreadsheets; database management systems and graphics. *Prerequisite:* 30 ch of university courses including one of IT 1803, CS 1003, or CS 1073.

DA2704 **Data Analytics using Python** **4 ch (3C 1L) [P]**
(Cross-Listed: CS2704) (A)

This course teaches data-driven problem solving. Starting from installing a Python programming environment, students will learn reading data, producing graphs, hypothesis testing and Bayesian statistics with hands-on programming experience. The course is also a stepping stone to more advanced subjects, such as machine learning and AI. Although no prior programming experience is required, there is a substantial programming component to the course. *Prerequisite:* STAT 1793 or STAT 2593 or STAT 2263 or BA 1605 or PSYC 2901.

DA2714 **Text Analytics (Cross-Listed: CS2714) (O)** **3 ch (3C)**

Introduction to the analysis of textual data with a foundation on natural language processing and computational linguistics. Students will learn to develop information extraction pipelines and evaluate performance. *Prerequisites:* DA 2704, CS 1083, CS 1103

DA3053 **Mathematical Software** **4 ch (3C 1T)**

Advanced software packages and programming languages developed for mathematical computations: symbolic, graphical, numerical and combinatorial. Students will be involved in implementing and testing various algorithms. *Prerequisites:* MATH 2003, MATH 1503, or CS 1073.

DA3123 **Numerical Treatment of Geometric Modeling** **4 ch (3C 1T)**

Presents the nature, development and application of the basic concepts of geometric modeling. The parametric geometry is considered primarily for curves including analytical properties, intersections and transformation. Emphasizes numerical methods and analysis with applications being drawn from such areas as image processing, graphics and computer-aided design. *Prerequisite:* CS 3113.

DA3203 **Data Analysis Using Statistical Software Packages** **4 ch (3C)**

This is a case-studies based course in which students learn to analyse data in a modern statistical computing environment. The course promotes the use of graphical and other exploratory techniques as a crucial first step in data analysis. Students will be exposed to practical problems often encountered during the data analysis process. The importance of summarizing and communicating results effectively will be emphasized through the strong project-oriented component of the course. *Prerequisites:* 3 ch in each of three subjects: Mathematics, Statistics, and Computer Science.

DA4123 **Numerical Solution of Systems** **4 ch (3C 1T)**

Emphasis on linear systems with discussion on topics such as large, small; sparse, full; square, nonsquare systems. Methods of solution involve a survey of direct and interactive techniques. As time permits, the discussions will be extended to include nonlinear systems. Applications drawn from statistics and operations research. Both writing computer programs and working with stored computer programs form an integral part of the course. *Prerequisite:* CS 3113.

DA4403 **Data Mining (O) (Cross-Listed: CS4403)** **4 ch (3C 1L)**

Data mining (aka knowledge discovery) is an interdisciplinary area of computer science with the goal of extracting new knowledge and insights

from big and complex data sets. The course introduces essential pattern recognition methodologies leveraging machine learning and rule-based techniques. Supplementary tasks involving processing, cleaning, integration, and transformation of data are also covered. An etymology of data mining is provided to help students compare and contrast knowledge discovery with contemporary data analytics and decision support methodologies. *Prerequisites:* CS 1103, CS 2704 and (STAT 2593 or STAT 2793).

DA4803   **Independent Studies in Data Analysis**   **4 ch (3C 1T)**

Discussion of Data Analysis topics at an advanced level chosen jointly by student, advisor and Department Chair. Topic of course to be entered on the student's transcript.

DA4813   **Independent Studies in Data Analysis**   **4 ch (3C 1T)**

Discussion of Data Analysis topics at an advanced level chosen jointly by student, advisor and Department Chair. Topic of course to be entered on the student's transcript.

DA4993   **Project in Data Analysis**   **4 ch (2S) [W]**

Application of correct and appropriate methods of data analysis in one or more areas. A project proposal is required with a final report in which the student describes clearly and concisely the work done, the results obtained, and a careful interpretation of the results in form and language meaningful to workers in the subject area. Students in the Certificate of Data Analysis should choose an industry-related or applied project involving a large amount of data. It should be noted that such a project may require extra time in order to become familiar with the data at hand. *Prerequisite:* Permission of Program Director.

ECONOMICS

ECON1004   **Economics and Society (O)**   **3 ch (3C)**

Designed for students who do not intend to major in economics. Examines the working of the market system, competition policy, price supports and regulation, labour markets and unions, and social issues. **NOTE**: BBA students cannot take this course for credit. Credit cannot be counted for both ECON 1013 and ECON 1004.

ECON1013   **Introduction to Microeconomics**   **3 ch (3C)**

Concerned with how modern mixed economies operate. Behaviour of consumers and business firms. Theory of the firm, production, costs and market structures, and distribution.

ECON1023   **Introduction to Macroeconomics**   **3 ch (3C)**

Concerned with the causes of unemployment and inflation, the determination of total output, investment, and interest rates. Stabilization policies, exchange rates and balance of payments.

ECON1073   **Economics for Engineers**   **3 ch (3C)**

An introductory course for students in Engineering and Computer Science. Topics include theory of markets, production, costs, externalities, and the macroeconomics of aggregate output determination and growth. **NOTE**: Credit will not be given for both ECON 1073 and ECON 1013/ECON 1023.

ECON2013   **Intermediate Microeconomics**   **3 ch (3C)**

This course develops material from ECON 1013. Applications of microeconomic theory are emphasized. *Prerequisite:* ECON 1013.

ECON2023   **Intermediate Economics**   **3 ch (3C)**

This course develops material from ECON 1023. Applications of macroeconomic theory are emphasized. *Prerequisite:* ECON 1023.

ECON2091   **Contemporary Issues in the Canadian Economy I (O)**   **3 ch (3C)**

Concerned with current issues in the Canadian Economy. Topics may include public policy towards unemployment, inflation, foreign investment, poverty, income distribution and regional development. *Prerequisites:* ECON 1013 and ECON 1023.

ECON2092   **Contemporary Issues in the Canadian Economy II (O)**   **3 ch (3C)**

Analysis of specific economic phenomena in Canada. *Prerequisites:* ECON 1013 and ECON 1023.

ECON2103   **Financial Institutions and Markets**   **3 ch (3C)**

An introduction to the microeconomic aspects of monetary theory and policy. Topics include how money is defined and measured, portfolio theory, theories of the interest rate, the determination of the money supply, and bank regulation. *Prerequisites:* ECON 1013 and ECON 1023.

ECON2213 Poverty, Inequality and Income Redistribution (O)   **3 ch (3C)**

Definition, extent and causes of poverty. Distribution of income and wealth in Canada and abroad. Rationales for and effectiveness of income redistribution policies. *Prerequisites:* ECON 1013.

ECON2503   **Regional Economic Development**   **2 ch (3C)**

Why do some regions prosper while others flounder? The course introduces how key theories use economic principles to explain differential regional performance, as well as core tools used to undertake regional economic analysis. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3013   **Microeconomics I**   **3 ch (3C)**

The theory of consumer demand and of production costs. The elementary theory of the firm: pure competition and pure monopoly; an introduction to monopolistic competition and oligopoly. *Prerequisites:* ECON 2013 and one of: MATH 1853 (with MATH 2853 strongly recommended), MATH 1003, or permission of the instructor.

ECON3023   **Macroeconomics I**   **3 ch (3C)**

A study of the standard macroeconomic models of closed and open economies. Macroeconomic problems, such as unemployment, inflation, and balance of payment disequilibria are examined. Alternative stabilization policies are evaluated with reference to the Canadian economy. *Prerequisites:* ECON 2023 and one of: MATH 1853 (with MATH 2853 strongly recommended), MATH 1003, or permission of the instructor.

ECON3091   **Urban Economics (O)**   **3 ch (3S)**

An introduction to the economic analysis of the development of urban areas. Topics include the evolutionary development of cities, the location of cities and of activities within them, and theories of urban growth. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3099   **History of Economic Thought (O)**   **3 ch (3C)**

A study of the major contributions to economic analysis from Adam Smith to Alfred Marshall. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3114   **International Financial Institutions and Markets**   **3 ch (3C)**

An introduction to the Macroeconomic aspects of monetary theory and policy. Topics include how the Central Bank influences the interest rate and inflation rate, the demand and supply for money, international financial markets, and international banking. *Prerequisite:* ECON 2103 or permission of the instructor.

ECON3213   **Public Sector Economics (O)**   **3 ch (3C)**

The nature and role of the public sector in a market economy. Topics include taxation and government expenditure and their effects on the allocation of resources and the distribution of income, and the growth of the public sector. *Prerequisites:* ECON 1013 and ECON 1023. **NOTE**: Credit will be granted either for ECON 3213 or for ECON 3203 / ECON 3233.

ECON3375   **Labour Economics (O)**   **3 ch (3C)**

Determinants of labour supply and demand. Includes structure of wages, male-female earnings differentials, employment insurance, unions, strikes, and labour relations. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3401   **International Trade & Trade Policy (O)**   **3 ch (3C)**

The principles of international trade, and issues in trade policy. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3412   **International Macroeconomics and Finance**   **3 ch (3C)**

The economics of exchange rate determination, the balance of payments, international borrowing and lending. Role of international financial institutions. *Prerequisite:* ECON 2023

ECON3531   **International Development (O)**   **3 ch (3C)**

Development theory at both sectoral and aggregate level; analysis of growth, employment, distribution of income, intersectoral investment allocation, and investment in human capital. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3542   **Topics in International Developments (O)**   **3 ch (3C)**

An analysis of the international dimension of economic problems faced and policies adopted by developing countries of Asia, Latin America, and Africa. Topics include: international trade, direct foreign investment, technology transfer, regional economic blocks, structural liberalization, debt and development financing, high rate of population growth and exhausting of natural resources. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3613   Game Theory   3 ch (3C)

An introduction to game theory - a type of applied mathematics that describes strategic behaviour. Examples will be drawn from economics, political science, sociology and biology. This interdisciplinary course is open to students who have successfully completed 15 term-courses (45 ch) or by permission of the instructor.

ECON3665   Mathematical Economics   3 ch (3C)

A course in economic theory concerned with topics in micro-and macroeconomics. Emphasis is on the use of mathematics in the development of economic theory, particularly calculus and matrix algebra. *Prerequisites:* ECON 2013, ECON 2023. Also, Mathematics requirement for Majors must be completed before a student is admitted.

ECON3702   Cost Benefit Analysis (O)   3 ch (3S)

Comparative study of costs and benefits and the impact of public projects and policy initiatives. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3755   Environmental Economics (A)   3 ch (3C)

Examines interaction of ecological and economic systems, considering population growth, food supply, and non-renewable resources. *Prerequisites:* ECON 1013 or ECON 1023.

ECON3813   Health Economics   3 ch (3C)

Health Economics is an applied economics course drawing heavily upon microeconomic theory. Through the application of economic principles, this course evaluates healthcare institutions and markets with an emphasis on Canadian issues and policies. The topics covered include the determinants of healthcare, the economics of insurance and risk aversion, the behaviour of consumers and healthcare providers, asymmetric information, and the nature of the market for healthcare services. *Prerequisite:* ECON 1013 or permission from the instructor.

ECON3835   Market Strategies and Organization (O)   3 ch (3C)

The analysis of market structure, firm strategy and performance, and public policy issues. *Prerequisite:* ECON 2013.

ECON4035   Macroeconomics II   3 ch (3C)

Advanced course in macroeconomic theory and analysis, with emphasis on the theory of investment, consumption, money and employment. Neoclassical monetary equilibrium, and the Keynesian and post-Keynesian models. *Prerequisite:* ECON 3023.

ECON4045   Microeconomics II   3 ch (3C)

Topics may include theories of imperfect competition, search and information, market failures, property rights, simple general equilibrium models. *Prerequisite:* ECON 3013.

ECON4645   Introduction to Applied Econometrics (O)   3 ch (3S)

The objective of the course is to explain the problems and issues associated with empirical measurement of economic relationships, and an assessment of the techniques by which those problems may be solved. *Prerequisites:* STAT 1793 and STAT 2793 (or equivalent), and 4 term-courses in Economics. **NOTE**: Credit cannot be counted for both ECON 4645 and STAT 4703.

ECON4665   Mathematical Economics II   3 ch

This course extends the work from ECON 3665, building upon the student's background in algebra and multivariate calculus. Emphasis is placed on both static and dynamic optimization models. *Prerequisite:* ECON 3665.

ECON4998   Topics in Economics I (O)   3 ch (3WS/S)

Directed study/reading programs. Workshops or seminars will be held as required. Students should apply to the Department in September or January for permission to take this course. *Prerequisites:* ECON 2013 and ECON 2023.

ECON4999   Topics in Economics II (O)   3 ch (3WS/S)

Directed study/reading programs. Workshops or seminars will be held as required. Students should apply to the Department in September or January for permission to take this course. *Prerequisites:* ECON 2013 and ECON 2023.

EDUCATION

ED2514   First Nations in Noth America   3 ch [W]
      to the War of 1812

This course will focus on the history of Indigenous Peoples in the context of early European exploration, the furt trade, missionization, and colonial policies. This course is cross-listed with HIST 2154 and students may not receive credit for both courses.

ED3021   Human Development and Learning: An Overview   3 ch (3C)

A study of theory, methods and research findings in infancy and childhood. Examines social, cognitive, emotional and physical development. Credit will not be granted for both PSYC 2201 and ED 3021 **NOTE**: Open to Education Students only. *Prerequisites:* PSYC 1003 and PSYC 1004.

ED3031   The Education of Exceptional Learners   3 ch (3C)

Provides the student with an introduction to the field of knowledge associated with exceptional learners.

ED3041   The Theory and Practice of Education   3 ch (3C)

A study of dominant theories which influence and shape educational thinking and practice today. Key ideas, their origins, their current representatives gained, and the transposition of ideas into educational applications will be discussed.

ED3092   Frameworks of Education   3 ch (3C)

Examines various systems, structures, governance, and social factors as they apply to Elementary Education in NB. Credit will not be granted for both ED 3092 and ED 3051. *Prerequisite:* ED 4164.

ED3211   Introductions to Visual Education   3 ch (3C)

Addresses the history, rationales, developmental theories, curriculum planning, and basic art-making skills essential for teaching art at the elementary, middle, and high school levels. Visual understanding and how it can be increased through school art programs is a key consideration.

ED3241   Music for the Classroom Teacher   3 ch (3C)

Outlines the materials in the music curriculum that the classroom teacher might be expected to teach, plus a study of various ways to integrate music into the general classroom curriculum.

ED3424   Teaching Elementary School Mathematics   3 ch (3C)

Focus on appropriate methodology for teaching mathematics at the elementary school level. Students must demonstrate competency in the mathematics content underlying the curriculum prior to completion of this course. *Prerequisite:* MATH 2633 or a MATH course approved by the Education Coordinator.

ED3474 Health & Movement Education in the Elementary School 3 ch (3C)

Examines curriculum and pedagogy in elementary health and physical education programs.

ED3511   Introduction to Science Education   3 ch (3C)

An introduction to the teaching of science across and for particular learner levels.

ED3561   Introduction to Second Language Education   3 ch (3C)

An overview of the theories of learning and teaching in the Second Language context with particular emphasis on a Communicative, multi-dimensional and multi-resource methodology. (ED 4565 can be taken in place of ED 3561 but students cannot count both towards the TESL certificate). *Prerequisites:* Successful completion of 10 term-courses with a GPA of 2.7 or better, advanced written and spoken English language skills.

ED3621   Introduction to Social Studies (O)   3 ch (3C)

Consideration of the history of Social studies, debates about the content of social studies and the current state of social studies in Canada.

ED3803   Service Learning in Elementary Education   3 ch (3C)

This course will enable participating students to gain some early practical and hands-on experience in a community school. By providing direct service to a local area school, students will have an opportunity to confirm that their chosen pursuit of a career in the teaching profession. The experience gained in this course will also allow students to see and experience first hand the diversity of learners that are present in the public school system. *Prerequisite:* ED 4164.

ED4003   Field Experience for BEd Concurrent Students

Field experience for BEd concurrent students. Must be completed before ED 5040 Practicum. *Prerequisite:* ED 4164.

ED4164   Techniques of Teaching   3 ch (3C)

Students will learn to design lessons to meet a variety of teaching situations. Classroom skills will be learned and practiced in mini-teaching sessions in front of peers and a supervising faculty member. Causes of student behaviour problems will be analyzed and strategies for dealing with disruptive students developed. This course is mandatory for first year BA/BEd students and a prerequisite for ED 4003 Field Experience for BEd Concurrent Students (SJ).

ED4354 **Literacy Learning in Early Years (O)** **3 ch (3C)**

Current theories of the nature of literacy learning and their relationship to instructional practices in the early years. *Prerequisites:* ED 4164, ED 3021, ED 3031.

ED4562 **Advanced Studies in ESL Education** **3 ch (3C)**

Examines communicative language teaching in the context of classrooms. Emphasizes varied teaching methods, curriculum development, and evaluation of second language learning. *Prerequisites:* Successful completion of 10 term-courses; as well as ED 3561 or ED 4565. *Co-* or *Prerequisite:* LING 2101 or equivalent (3 ch).

ED4565 **ESL for the Classroom Teacher** **3 ch (3C) (LE)**

This course is designed for classroom teachers, and future classroom teachers who have English Language Learners, (ELLS) in their classrooms. Topics to be examined include; Second Language Learning, Sheltered Instruction, Teaching Strategies, the S.I.O.P. (Sheltered Instruction Observational Protocol) Model and Assessment. ED 3561 can be taken in place of ED 4565 but students cannot count both towards the TESL certificate. *Prerequisites:* Successful completion of 10 term-courses, advanced written and spoken English Language skills.

ED5032 **Inclusion from the Early Years** **3 ch (3C)**

An examination of personal, societal and school assumptions about the meaning and importance of inclusion in life and learning from childhood. Inclusive methods of education will be examined. *Prerequisites:* ED 3031

ED5040 **Internship for Concurrent Education** **15 ch**

A 15-week Practicum for students in local elementary schools. *Prerequisites:* A Cumulative GPA of at least 2.7, and an updated criminal record and vulnerable sector check. Completion of all required Education courses and 30 term-courses in BA degree.

ED5091 **Learning Disabilities: Introduction** **3 ch (3C)**

Concepts, definitions and terminology. A preventive approach.

ED5096 **Behavioural/Emotional Disorders: Introduction (O)** **3 ch (3C)**

An overview of various emotional and behavioural disorders of children and young people and the ways in which coping and management strategies can be applied to develop self-discipline and control. *Prerequisite:* ED 3031.

ED5191 **Independent Studies (O)** **3 ch**

Students will normally be limited to only 3 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

ED5566 **Field Experience in TESL** **3 ch**

Supervised field experience for students in an environment in which they can both observe qualified instructors and participate in planning and teaching English as second or additional language. (The course does not qualify for the 4 term-courses of ED courses which may be applied to the BA degree). *Prerequisites:* Successful completion of 10 term-courses; as well as ED 3561 or ED 4565. *Co-* or *Prerequisite:* LING 2101 or equivalent (3 ch).

ED5976 Instructional Technology Across the Curriculum (O) 3ch (3C) (1L)

A critical examination of the role of instructional technology across the curriculum. Technologies and strategies for integration to enhance classroom instruction will be developed and evaluated.

ELECTRICAL AND COMPUTER ENGINEERING

A grade of C or higher is required in all Electrical Engineering courses.

ECE1813 **Electricity and Magnetism** **4 ch (3C 1T 3L*)**

An introduction to the fundamentals of electricity and magnetism and applications. Covers concepts of charge, electric fields, voltage, current, power, energy, magnetic fields and the link between electricity and magnetism for the creation of machines. Includes resistors, resistance, Ohm's law, Kirchhoff's voltage and current laws, some electrical properties of materials. Electric sources, simple series, parallel, and series-parallel DC circuits and mesh analysis are examined. Energy conversion and simple electric machines are examined. The behaviour and use of common sensors and transducers are discussed. *Prerequisite:* Two years of high school physics (or equivalent). *Co-requisite:* MATH 1003.

ECE2021 **Electrical Design, Experimentation,** **2 ch (1C 2L)**
and Measurements

A practically oriented course focusing on the application of basic electrical design principles including analog and digital circuit design, prototyping, measurement, testing, troubleshooting, documentation, and version control. *Prerequisite:* ECE 1813.

ECE2214 **Digital Logic Design** **3 ch (3C 1T)**

An introductory course to practical aspects of digital system design. The course covers digital logic design, including basic design concepts and implementation technology, number representations, synthesis of combinational and sequential logic, and the use of HDL and computer-based tools. *Prerequisite:* CMPE 1003 or CS 1003 or CS 1073 or equivalent. *Recommended:* ECE 1813. *Co-requisite:* ECE 2215.

ECE2215 **Digital Logic Design Laboratory** **1 ch (3L*)**

This is an introductory course to practical aspects of digital systems design. Course includes the design of digital circuits with CAD tools and VHDL hardware description language. *Prerequisite:* CMPE 1003 or CS 1003 or CS 1073 or equivalent. *Recommended:* ECE 1813. *Co-requisite:* ECE 2214.

ECE2412 **Simulation and Engineering Analysis** **4 ch (3C 2L*)**

An introduction to modelling and numerical methods as applied in the solution of engineering problems. The solution of nonlinear equations, polynomials, curve fitting, numerical integration and difference equations. Simulation tools such as MATLAB will be used. *Prerequisites:* CMPE 1003 or CS 1003 or CS 1073 or equivalent; ECE 1813 or equivalent; MATH 1013; MATH 1503 or MATH 2213 or equivalent.

ECE2711 **Electric Circuits** **4 ch (3C 1T 3L*)**

Basic DC circuits: network analysis and theorems: AC circuits: introduction of phasors, network analysis and theorems applied to AC circuits. *Prerequisites:* MATH 1013; ECE 1813 or equivalent.

ECE2722 **Circuits and Systems** **4 ch (3C 1T 3L*)**

Network analysis; transient and steady state responses; transfer functions; complex frequencies; poles and zeros; Laplace Transforms; frequency response and Bode Plots; filters (passive and active). *Prerequisites:* ECE 2711 or equivalent; MATH 1503 or MATH 2213 or equivalent. *Co-requisite:* MATH 3503 or equivalent.

ENGINEERING

ENGG1001 **Engineering Practice Lecture Series** **0 ch (1C)**

A guest lecture series intended to introduce students to the engineering profession. Speakers from various engineering disciplines and job functions share their career experiences and discuss engineering projects underway in the region.

ENGG1003 **Engineering Technical Communication** **4 ch (2C 3L) [W]**

Oral, written and visual communication skills are developed as important tools used by engineers. Technical writing style is taught through the preparation of reports and summaries, and oral communication skills are improved through public speaking and the preparation of formal presentations. Computer-aided design is introduced and used to enhance visualization skills. The importance of information literacy is stressed. Various types of engineering drawings are presented and engineering unit conversions are practiced.

ENGG1015 **Introduction to Engineering Design and** **2 ch (1C 2L) [W]**
Problem Solving

This course introduces engineering design methodology and develops basic problem solving techniques. Students work both individually and in teams on real engineering design projects for the local community in a simulated engineering consulting environment. Project planning, team-building, leadership and responsible care are discussed. Laboratories are used to demonstrate problem solving techniques for analytical and open-ended problems, and life-long learning is emphasized by having students integrate *Co-requisites* and researched material into a structured design process. Restricted to students with fewer than 60 ch of program credit upon first admission to the Faculty of Engineering or with permission of the instructor. *Co-requisites:* ENGG 1003, APSC 1013, MATH 1003, MATH 1503.

ENGG4013 **Law and Ethics for Engineers** **3 ch (3C)**
General introduction to the legal and ethical aspects of engineering practice. Social responsibilities of engineers, the engineering act and code of ethics, occupational health and safety, sustainable development, environmental stewardship, employment equity, legal duties and liabilities of the professional engineer, contracts, the tort of negligence, labour law, intellectual and industrial property, conflict resolution. Restricted to students with at least 100 ch in the engineering program. Limited enrolment; priority given to students in their final year of engineering.

ENGG4032 **Engineering Economics** **3 ch (3C)**
Application of engineering economic analysis to mechanical and industrial engineering systems. Major emphasis will be given to decision-making based on the comparison of worth or alternative courses of action with respect to their costs. Topics include discounted cash flow mechanics,

economic analyses, management of money, economic decisions. Restricted to students with at least 60 ch in their program.

ENGLISH

The prerequisite for upper level courses in English is 3 term-courses of English at the lower level, or unless special permission is obtained from the instructor.
NOTE: See the beginning of the Saint John Courses (Section F) of this calendar for abbreviations, course numbers and coding.

ENGL1001   Introduction to the Study of Literature   3 ch (3C) [W]

An introduction to the principles of literary analysis.

ENGL2001   Introduction to Poetry   3 ch (3C) [W]

An introduction to poetic forms, language and theme within an historical context. Students will be encouraged to participate in the critical analysis of the poems in the course. There will be a special emphasis on written assignments.

ENGL2002   Introduction to Drama   3 ch (3C) [W]

Introduces dramatic genres, language, theoretical approaches and staging within an historical context. **NOTE**: this is a course in reading drama and not in acting. There will be a special emphasis on written assignments.

ENGL2003   Introduction to Prose   3 ch (3C) [W]

An introduction to the critical analysis of prose - short stories, novellas, novels - within an historical context. There will be a special emphasis on written assignments.

ENGL2004   Special Topics in English Literature   3 ch [W]

This course focuses on specialized areas of interest in or specific authors of English.

ENGL2101   Literature in English I   3 ch (3C) [W]

A survey of literature to the end of the 18th Century.

ENGL2102   Literature in English II   3 ch (3C) [W]

A survey of literature in English from 1800 to the present.

ENGL3009   Studies in Medieval Literature   3 ch (3C) [W]

A study of selected texts from the 5th to the 15th centuries CE in Britain.

ENGL3104   Shakespeare and Pedagogy   3 ch (3C) [W]

This course will study various pedagogical approaches for up to three Shakespeare plays frequently taught at the high school level. **NOTE**: The prerequisite for upper level courses in English is 3 term-courses of English at the lower level, or unless special permission is obtained from the instructor.

ENGL3105   Shakespeare's Earlier Plays   3 ch (3C) [W]

This course is a study of a selection of Shakespeare's earlier plays (pre-1600) in context. This course will also examine early theatres, genre, and possible dramatizations.

ENGL3106   Shakespeare's Later Plays   3 ch (3C) [W]

This course is a study of a selection of Shakespeare's later plays (post-1600) in context. This course will also examine early theatres, genre, and possible dramatizations.

ENGL3107   Renaissance Drama (Non-Shakespearian)   3 ch (3C) [W]

This course is an introduction of Elizabethan and Jacobean plays in context. This course will also examine early theatres, genre, and possible dramatizations.

ENGL3108   Studies in Early Renaissance Literature   3 ch (3C) [W]

This course is an introduction to prose and poetry of the early Renaissance (1510-1640), studied in the context of the period's wide-ranging literary, political, religious and social changes.

ENGL3109   Studies in Later Renaissance Literature   3 ch (3C) [W]

This course is an introduction to prose and poetry of the later Renaissance (1590-1670), studied in the context of the period's wide-ranging literary, political, religious and social changes.

ENGL3203   Restoration and 18th Century Drama   3 ch (3C) [W]

Traces British Drama from its bawdy rebirth in 1660, through the sentimental domesticity of the early eighteenth century, to the "laughing comedy" at the century's end. Also considers the history of the London theatre.

ENGL3204   18th Century Prose and Poetry   3 ch (3C) [W]

Examines the literature of the 18th century, excluding the drama.

ENGL3205   Prose Narrative Before 1800   3 ch (3S/C) [W]

Examines genres of prose narrative through to 1800 with emphasis on the novel.

ENGL3302   Romantic Novel   3 ch (3C) [W]

A study of the development of the novel in Romantic Britain. Topics studied may include the novel of sensibility, the Gothic novel, the English Jacobin novel, the historical novel, and the national tale.

ENGL3303   Romantic and Victoria Drama   3 ch (3C) [W]

Explores both the literary and theatrical dimensions of the nineteenth century. Studies closet drama, melodrama, comedy, farce, pantomime, burlesque, extravaganza, and spectacular entertainment.

ENGL3304   Studies in the Romantic Age   3 ch (3C) [W]

This course will study a selection of texts from the period 1789 to 1832.

ENGL3311   Victorian Poetry   3 ch (3C) [W]

Studies the major poets of Victorian Britain.

ENGL3312   Victorian Novel   3 ch (3C) [W]

A study of a selection of Victorian novels from the period 1832 to the end of the nineteenth century.

ENGL3313   The Earlier Victorian Age   3 ch (3C) [W]

This course will study a selection of texts from the period 1832 to 1870.

ENGL3314   The Later Victorian Age   3 ch (3C) [W]

This course will study a selection of texts from the period 1870 to 1901.

ENGL3315   Neo-Victorian Narratives   3 ch (3C) [W]

This course will consider a variety of narratives to investigate how and why the "Neo-Victorian" attempts to revision and/or recreate the atmosphere, issues and characterization of the Victorian Age.

ENGL3402   Modern British Novel   3 ch (3C) [W]

A study of selected novels.

ENGL3404   Irish Literature   3 ch (3C) [W]

A study of the literature of Ireland.

ENGL3405   Studies in Modern British Literature   3 ch (3C) [W]

A study of selected British short fiction, poetry, essays, and novels of the 20th century.

ENGL3502   Canadian Novel   3 ch (3C) [W]

A study of selected novels.

ENGL3504   Canadian Short Fiction   3 ch (3C) [W]

A study of selected short fiction.

ENGL3505   Maritime Poetry   3 ch (3C) [W]

A study of Maritime poetry from its beginnings, with an emphasis on 20th century developments.

ENGL3506   Maritime Fiction   3 ch (3C) [W]

An overview of the variety of genres in Maritime fiction.

ENGL3507   Studies in Maritime Literature   3 ch (3C) [W]

A study of selected Maritime short fiction, poetry, essays, and novels of the 19th and 20th century.

ENGL3508   Canadian Literature WWII   3 ch (3C) [W]

A study of Canadian poetry, short fiction, criticism, and novels written before the Second World War.

ENGL3509   Canadian Literature after WWII   3 ch (3C) [W]

A study of Canadian short fiction, poetry, novels, and criticism written after World War II.

ENGL3512   American Short Fiction   3 ch (3S) [W]

A study of 19th and 20th Century American short fiction.

ENGL3513   American Drama   3 ch (3S) [W]

A study of the work of major American playwrights of the 20th Century.

ENGL3514   The 19th Century American Novel   3 ch (3C) [W]

A study of the 19th Century American novel.

SECTION F: SAINT JOHN COURSES

ENGL3515   **20th Century American Novel**   3 ch (3C) [W]

A study of 20th Century American novels.

ENGL3601   **Introduction to Literary Theory**   3 ch (3C) [W]

A historical survey of literary theory.

ENGL3611   **Book Production (A)**   3 ch (3C/WS) [W]

This class combines a senior seminar on the history of the book with a hands-on workshop on selected elements of book production.
Prerequisite: 9 ch of lower-level English or permission of the instructor.

ENGL3621   **Writing by Women I**   3 ch (3C) [W]

A study of texts by women in a variety of genres to the mid-eighteenth century.

ENGL3622   **Writing by Women II**   3 ch (3C) [W]

A study of texts by women in a variety of genres since the mid-eighteenth century.

ENGL3631   **Studies in Gender and Genre**   3 ch (3C) [W]

Examines the development of masculinities and/or femininities in the context of a particular or several literary genre(s).

ENGL3709   **Children's Literature**   3 ch (3C) [W]

An overview of children's literature.

ENGL3713   **Special Topics I**   3 ch (3C) [W]

This course focuses on specialized areas of interest. *Prerequisites*: Three term-courses of lower level English.

ENGL3714   **Special Topics II**   3 ch (3C) [W]

This course focuses on specialized areas of interest.

ENGL3718   **Studies in Young Adult Literature**   3 ch (3C) [W]

This course will trace the development of Young Adult literature in the twentieth and twenty-first centuries. Authors may include N. Gaiman, S. E. Hinton, L. Lowry, P. Ness and others.

ENGL3719   **Studies in Indigenous Literature**   3 ch (3C) [W]

A study of selected texts by Indigenous authors in the land that is now Canada.

ENGL3721   **Literature of the Fantastic before the 20th Century**   3C (3S/C) [W]

This course examines the development of fantastic literature from the early modern period to the beginning of the 20th Century.

ENGL3722   **Topics in Speculative Fiction**   3 ch (3S) [W]

This course examines specific themes, movements, and/or authors of science fiction and/or fantasy from the early 20th century.

ENGL3725   **The Gothic Imagination**   3 ch (3C) [W]

This course will trace the development of the Gothic imagination to focus on the roots of these traditions and examine some common elements of the literary and/or adapted Gothic.

ENGL3801   **from Script to Performance**   3 ch (3C) [W]

This course integrates the study of drama as literature with the practical elements of theatrical production.

ENGL3802   **Reading Film**   3 ch (3C) [W]

This course will explore various ways of analyzing a variety of films.

ENGL3803   **American Film**   3 ch (3C) [W]

A study of major trends in American film.

ENGL3902   **Drama Production**   3 ch (3C) [W]

This course runs in cooperation with a local professional theatre company. It will offer students practical experience in a number of "backstage" elements of theatre production, such as set design and construction, costumes, publicity and program design. Enrolment is limited. *Prerequisites:* Three lower level term-courses in English and permission of the instructor.

ENGL3903   **The Development of Western Drama**   3 ch (3C) [W]

Studies a range of plays to illustrate the development of the dramatic tradition in the western world.

ENGL3922   **Special Topics in Creative Writing**   3 ch (3C) [W]

A workshop seminar in which a variety of genres, styles, and forms are studied and practiced through weekly assignments. Students who have

completed ENGL 3913 - Writing Poetry I or ENGL 3914 - Writing Poetry II are eligible to register for this course.

ENGL4000   **Joint Honours Thesis**   6 ch (6C) [W]

Honours thesis for Joint Honours Program in English and History.
Prerequisite: Acceptance into the Joint Honours Program in English and History.

ENGL4801   **Honours Essay: Reading and Research**   3 ch (3C) [W]

This course is devoted to the research portion of the honours project.

ENGL4802   **Honours Essay**   3 ch (3C) [W]

An honours essay to be attempted upon completion of ENGL 4801.
Prerequisite: ENGL 4801

ENGLISH SECOND LANGUAGE

AESL1301   **Academic Listening and Speaking**   0 ch (3C)

In this course students will learn and practice the academic listening and speaking skills necessary for success in any academic discipline. This course emphasizes critical understanding of ideas and verbal fluency in expressing viewpoints. ESL 1301 focuses on academic skills for note taking, comprehension of academic lectures, oral development, use and expansion of vocabulary, and the preparation and delivery of academic presentations. Reading and writing assignments act as a springboard for further listening and speaking activities. *Prerequisite:* IELTS 6.0 (or equivalent) or successful completion of Level 5 of Saint John College's English for Academic Purposes (EAP) Program.

AESL1302   **Academic Reading and Vocabulary**   0 ch (3C)

This course focuses primarily on understanding the logic and organization of academic texts and on teaching students various techniques and skills to develop their ability to read and synthesize texts of various sizes, while also being able to read critically and evaluate a text for its value to academic research. ESL 1302 also teaches students how to effectively locate academic sources of information through both the library and electronic resources, and to apply this research in academic writing assignments. By the end of this course, students will be able to read lengthy academic texts on a variety of topics, and comprehend the content at various levels (literal, referential, etc). In addition, they will be able to find scholarly sources related to a specific topic, and evaluate these sources for their readability, accuracy, and value. *Prerequisite:* IELTS 6.0 (or equivalent) or successful completion of Level 5 of Saint John College's English for Academic Purposes (EAP) Program.

AESL1303   **Academic Writing and Research**   0 ch (3C)

This course is designed for students who need to develop more proficient skills in English academic writing. ESL 1303 teaches students to write clearly and effectively in English, a skill that is transferable and necessary to success in any academic discipline. This course requires students to complete a number of short writing assignments every week, as well as a large research essay at the end of term. Students are taught how to brainstorm clear ideas, how to organize these ideas in useful outlines, and how to make these outlines into effective and coherent essays. Instruction in how to approporiatley use academic style in writing (APA style), how to document sources properly, as well as how to integrate scholarly research into academic essays using paraphrasing, summarzing, and quotations is also included. *Prerequisite:* IELTS 6.0 (or equivalent) or successful completion of Level 5 of Saint John College's English for Academic Purposes (EAP) Program.

FRENCH

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

FR1203   **Communication en français I**   3 ch (3C)

Français de base pour étudiants ayant au plus le Grade 10. **NOTE**: Les étudiants qui ont réussi, FR 1304, FR 2203, FR 2304, FR 2204, FR 3203, ou FR 3204, n'obtiendront pas de crédits academiques pour ce cours.

FR1203   **Communicating in French I**   3 ch (3C)

Introductory French course for students with no more than Grade 10 core French.

FR1204   **Communication en français II**   3 ch (3C)

Suite de FR 1203. Développement et exploration de la communication linguistique et des différences culturelles. *Prérequis*: FR 1203. **NOTE**: Les étudiants qui ont réussi FR 1304, FR 2203, FR 2204, FR 2304, FR 3203, ou FR 3204, n'obteindront pas de crédits academiques pour ce cours.

FR1204   **Communicating in French II**   3 ch (3C)

Continuation of FR 1203. Develops and explores language communication and culture differences. *Prerequisite:* FR 1203. **NOTE**:

Students with credit for any of FR 1304, FR 2203, FR 2204, FR 2304, FR 3203, or FR 3204, cannot take this course for credit.

FR1304   **Français pour étudiants de l'immersion I**   **3 ch (3C)**

Première partie d'un cours destiné à satisfaire les besoins particuliers des étudiants issus des écoles d'immersion. Revue systématique de la grammaire française. Ouvert aux étudiants issus d'écoles dont la langue première d'enseignement est le français. **NOTE**: Les étudiants qui ont réussi FR 1203, FR 1204, FR 2203, ou FR 2204, n'obtiendront pas de crédits académiques pour ce cours.

FR1304   **French for Immersion Students I**   **3 ch (3C)**

The first half of a course designed to meet the particular needs of students coming from immersion schools. The course offers a systematic review of French grammar. Graduates of high schools where French is the first language of instruction must register for this course. **NOTE**: Students with credit for any FR 1203, FR 1204, FR 2203, or FR 2204 cannot take this course for credit.

FR2203   **Communication en français III**   **3 ch (3C)**

Exploration du langage médiatique; présentation d'éléments de grammaire avancés, révision des noms et des verbes. Destiné à améliorer les connaissances du français et à renforcer la compréhension orale et écrite. *Prérequis*: FR 1204 ou equivalent. **NOTE**: Les étudiants qui ont réussi FR 1304, FR 2304, FR 3203, ou FR 3204, n'obtiendront pas pas de crédits académiques pour ce cours.

FR2203   **Communicating in French III**   **3 ch (3C)**

Students are exposed to the language of the media; more advanced grammar is presented and nouns and verb forms are reviewed. Designed to improve French communication skills by strengthening oral and written comprehension. *Prerequisite:* FR 1204 or equivalent. **NOTE**: Students with credit for any of FR 1304, FR 2304, FR 3203, or FR 3204 cannot take this course for credit.

FR2204   **Communication en français IV**   **3 ch (3C)**

Destiné à améliorer les outils de communication par le renforcement de l'expression orale et écrite. Conversation sur différents sujets et exercices pratiques de diverses formes de styles, appuyés par la révision des principales structures de la phrase. *Prérequis*: FR 2203, ou équivalent. **NOTE**: Les étudiants qui ont réussi FR 1304, FR 2304, FR 3203, ou FR 3204, n'obtiendront pas de crédits académiques pour ce cours.

FR2204   **Communicating in French IV**   **3 ch (3C)**

Designed to improve French communication skills by strengthening oral and written expression. Conversation on varied topics and practice of different writing styles is supported by grammatical background and a review of sentence building rules. *Prerequisite:* FR 2203 or equivalent. **NOTE**: Students with credit for any of FR 1304, FR 2304, FR 3203, or FR 3204 cannot take this course for credit.

FR2206   **Développement de l'expression orale**   **3 ch (3C)**

Destiné au développement du vocabulaire et de la communication orale. Composante orale de l'option de soutien du français.

FR2206   **Developing Oral Skills**   **3 ch (3C)**

Designed to develop vocabulary and strategies for oral communication. Oral component of the French Maintenance option.

FR2208   **Le Français professionnel**   **3 ch (3C)**

Ce cours offre une formation en FLS (Français langue seconde) et prepare les etudiants a l'evaluation des competences linguistiques du ministere de l'Education postsecondaire. Formation et Travail du Nouveau-Brunswick, ainsi qu'aux examens d'evaluation des compentences linguistiques en français des employes des secteurs publics, provincial et federal. *Prérequis*: FR 2203 ou FR 1304.

FR2208   **Professional French**   **3 ch (3C)**

Provides FSL (French Second Language) training and prepares students for the New Brunswick Department of Post-Secondary Education, Training and labour Linguistic Services oral Proficiency Test, as well as for Provincial and Federal bilingualism examinations aimed at assessing competence in French of public sector employees. *Prerequisite:* FR 2203 or FR 1304.

FR2304   **Français pour étudiants de l'immersion II**   **3 ch (3C)**

Deuxième partie d'un cours destiné à satisfaire les besoins particuliers des étudiants issus des écoles d'immersion. Suite de FR 1304, ce cours offre une revue systématique de la grammaire française. Ouvert aux étudiants issus d'écoles dont la langue première d'enseignement est le français. Prerequis: FR 1304, ou avec la permission du professor. **NOTE**: Les étudiants qui ont réussi FR 1203, FR 1204, FR 2203, ou FR 2204, n'obtiendront pas de crédits académiques pour ce cours.

FR2304   **French for Immersion Students II**   **3 ch (3C)**

Second half of a course designed to meet the particular needs of students coming from immersion schools. As a continuation of FR 1304, this course provides a systematic review of French grammar. Graduates of high schools where French is the first language of instruction must register for this course. *Prerequisite:* FR 1304, or permission of the instructor. **NOTE**: Students with credit for any of FR 1203, FR 1204, FR 2203, FR 2204 cannot take this course for credit.

FR3084   **Le monde des affaires en français**   **3 ch (3C)**

Par le biais de textes divers et d'études de cas, ce cours améliore les connaissances de l'étudiant en français des affaires. La rédaction de lettres, de mémos, de procès-verbaux et de rapports sont étudiés. Ce cours prépare aussi les étudiants qui désirent faire l'examen de la Chambre de Commerce et de l'Industrie de Paris. *Prérequis*: FR 2204 ou équivalent.

FR3084   **Conducting Business in French**   **3 ch (3C)**

Through various texts and case studies, students will be shown the different approaches used in a francophone environment and learn to communicate more effectively. Formats for letters, memos, minutes and reports will be studied. This course also prepares students who wish to write the examination set by the Chambre de Commerce et d'Industrie de Paris. *Prerequisite:* FR 2204 or equivalent.

FR3203   **Communication avancée**   **3 ch (3C)**

Destiné à familiariser l'étudiant aux structures complexes du langage et à l'application efficace de ces concepts dans leur expression orale et écrite. *Prérequis*: FR 2204 ou FR 2304 (avec la permission du professeur), ou équivalent.

FR3203   **Advanced Communication**   **3 ch (3C)**

Designed to familiarize students with complex language structures and to prepare them to apply these concepts effectively in their oral and written expression. *Prerequisite:* FR 2204 or FR 2304 (with permission of the instructor), or equivalent.

FR3204   **Français écrit avancé**   **3 ch (3C)**

Destiné au développement plus particulier des connaissances de structures complexes et de leur usage dans l'expression orale et écrite - en particulier la dissertation, le rapport, la lettre. *Prérequis*: FR 2204, ou FR 2304, FR 3203 ou équivalent.

FR3204   **Effective Writing in French**   **3 ch (3C)**

Designed to further develop the knowledge of complex structures and their use in oral and written expression - particularly essays, reports and letters. *Prerequisites:* FR 2204, or FR 2304, FR 3203 or equivalent.

FR3324   **Traduction I**   **3 ch (3C)**

Destiné à familiariser l'étudiant aux principes fondamentaux de la traduction. Pratique de traduction de textes en français avec accent sur les diverses formes de traduction de concepts similaires en anglais et en français. *Prérequis*: FR 2204 ou FR 2304, FR 3203 ou équivalent.

FR3324   **Cross-Linguistic Communication I**   **3 ch (3C)**

Designed to familiarize the students with the fundamentals of translation theory. Students will practice translating text into French with emphasis on the different ways of expressing the same concept in English and French - - micro level. *Prerequisites:* FR 2204 or FR 2304, FR 3203 or equivalent.

FR3412   **L'acquisition de la langue**   **3 ch (3C)**

Ce cours presented le processes acquisition de la langue avec application au français. Les suet's de discussion influent l 'acquisition de la langue maternally (l'hypothèse de l'IP) et l'acquisition du français comme langue seconde en situations d'immersion et de bilinguisme. *Prérequis*: aucun sauf pour les étudiant(e)s du programme de français, qui doivent avoir fini FR 2204, ou FR 2304, ou un cours équivalent.

FR3412   **Language Acquisition**   **3 ch (3C)**

This is a course in language acquisition with application to French. Topics cover first language acquisition (the IP hypothesis) and second language acquisition of French in immersion and bilingual environments. *Prerequisite:* No *Prerequisites* except for the students enrolled in a French program, who must have FR 2204 or FR 2304.

FR3422   **L'histoire de la langue française**   **3 ch (3C)**

Ce cours présente les concepts de la linguistique diachronique dans la perspective de la grammaire générative en se basant sur l'histoire du français. Parmi les sujets abordés seront les changements du système phonologique, la transition au système sans cas, les changements paramètriques en syntaxe. *Prérequis*: aucun sauf pour les étudiant(e)s du programme de français, qui doivent avoir fini FR 2204, ou FR 2304, ou un cours équivalent.

307

FR3422   **The History of the French Language**   **3 ch (3C)**

A generative grammar approach to diachronic linguistics with application to French. Topics: changes in consonant and vowel systems, transition to a non-case system, parametric changes in syntax. *Prerequisite:* No *Prerequisites* except for the students enrolled in a French program, who must have FR 2204 or FR 2304.

FR3432   **Variation langagière I: Concepts de base**   **3 ch (3C)**

Étude des variations entre les langues selon leurs paramètres morphologiques. Illustrations et applications inspirées des dialectiques du français et de l'anglais, des "pidgins" et des créoles. *Prérequis*: FR 2204, FR 2304, ou équivalent.

FR3432   **Dialect Variation I: Basic Concepts**   **3 ch (3C)**

Study of variations among languages as rooted in the setting of morphological parameters. Illustrations and applications from French and English dialects, pidgins and creoles. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3434   **Les mots et leurs sense**   **3 ch (3C)**

Qu'est-ce qu'un lexique, qu'est-ce qu'un dictionnaire? Le mot (son sens, son évolution, ses variations et sa formation) sont au coeur de cette étude sur l'impact quotidien de l'oral et de l'écrit dans la communication. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3434   **Words and Meaning**   **3 ch (3C)**

What is a lexicon and what is a dictionary? Words (meaning, evolution, variants and formation) are the central topic of this study which looks at the impact of spoken and written words on daily communication. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3442   **Variation langagiere II: le français acadien**   **3 ch (3C)**

Étude des différences entre le français standard et le français acadien dans la perspective de leur variation paramétrique en morphologie. Une vue d'ensemble de la grammaire française acadienne sert de fondement à l'étude. *Prérequis*: FR 2204 ou FR 2304, ou FR 3432 équivalent.

FR3442   **Dialect Variation II: Acadian French**   **3 ch (3C)**

Differences between Standard French and Acadian French are approached from the perspective of parametric variation in morphology. An overview of Acadian French grammar provides the basis for this study. *Prerequisite:* FR 2204 or FR 2304, FR 3422, FR 3432 or equivalent.

FR3464   **La pensée et la phrase**   **3 ch (3C)**

Pourquoi les usagers d'une langue construisent-ils leurs phrases de la même manière? Explication du don inné de l'apprentissage d'une langue et description de modèles mentaux de création de phrases. *Prérequis*: FR 2204 ou 2304, ou équivalent.

FR3464   **Mind and Sentence**   **3 ch (3C)**

Why do speakers of a language construct their sentences in the same way? An investigation of the innate ability to learn a language is proposed. Mental models for creating sentences are considered. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3514   **Communication et expression littéraire**   **3 ch (3C)**

Exploration de la littérature comme mode de communication et comme effets de sens particuliers selon les usages de la prose fictive, de la non-fiction, de la poésie ou du théâtre. Étude de textes d'auteurs français du dix-neuvième et du vingtième siècle. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3514   **Communication and Literary Form**   **3 ch (3C)**

An exploration of literature as communication, and of the significance inherent in the choice of literary form whether prose fiction, non-fiction, poetry or drama. A variety of texts by French authors of the 19th and 20th centuries will serve as illustration. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3524   **Littératures françaises d'Afrique et des Caraïbes**   **3 ch (3C)**

Ce cours compare certains courants esthétiques et idéologiques propres aux littératures de francophone, d'Afrique et des Caraïbes, dans une perspective post-coloniale. *Prérequis*: FR 2204, FR 2304 ou équivalent.

FR3524   **Contemporary French African and**   **3 ch (3C)**
                 Caribbean Literatures

Examines in a comparative perspective some ideological and aesthetic trends in francophone, African and Caribbean literatures from a post-colonial point of view. *Prerequisite*: FR 2204 or FR 2304, or equivalent.

FR3525   **Francophone Storytelling**   **3 ch (3C)**

Examines storytelling as a literary genre and its sociocultural implications in the Francophone world, especially in the Sub-Saharan and northern parts of Africa as well as the French Caribbean. Emphasis will be on the prestige and the social role of the storyteller, but also on the influence of the oral tradition on Francophone Literature. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3525   **Le conte francophone**   **3 ch (3C)**

Ce cours examine le conte en tant que genre litteraire ainsi que ses implications socioculturelles dans le monde francophone, surtout en Afrique subsaharienne, au Maghreb et dans le Antilles francaises. Il souligne le prestige et le role social du Conteur, mais aussi l'influence de la tradition orale sur la litterature francophone. *Prerequis*: FR 2204, FR 2304, ou equivalent.

FR3614   **Auteurs de dix-huitieme siècle**   **3 ch (3C)**

Étude de textes représentatifs de quelques auteurs français importants du dix-huitième siècle. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3614   **Selected 18th Century Authors**   **3 ch (3C)**

A study of selected important works representative of one or two major French authors from the 18th century. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3615   **Auteurs du dix-neuvième siècle**   **3 ch (3C)**

Étude de textes représentatifs de quelques auteurs français importants du dix-neuvième siècle. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3615   **Selected 19th Century Authors**   **3 ch (3C)**

A study of selected important works representative of one or two major French authors from the 19th century. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3616   **Auteurs du vingtième siècle**   **3 ch (3C)**

Étude de textes représentatifs de quelques auteurs français importants du vingtième siècle. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3616   **Selected 20th Century Authors**   **3 ch (3C)**

A study of selected important works representative of one or two major French authors from the 20th century. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3626   **Chefs d'-oeuvre en litterature**   **3 ch (3C)**

Etude de textes foundateurs reconnus comme classiques dans la tradition litteraire de langue francais a travers l'histoire, les genres et les cultures. *Prérequis:* FR 2204 ou FR 2304, ou l'équivalent.

FR3626   **Literary Masterpieces in French**   **3 ch (3C)**

An overview of founding texts identified as classics of literary traditions I French across history, genres and cultures. *Prerequisites:* FR 2204 or FR 2304, or equivalent.

FR3636   **Autobiographie et littérature**   **3 ch (3C)**

Étude du récit de soi comme genre littéraire. Mémoires, confessions, journal intime, autofiction. Déscription, analyse, théorie et évolution. *Prérequis:* FR 2204 ou FR 2304, ou l'équivalent.

FR3636   **Autobiography as Literature**   **3 ch (3C)**

A study of self-narrative in French. Memoirs, confessions, personal diary, autofiction. Description, analysis, theory and evolution. *Prerequisites:* FR 2204 or FR 2304, or equivalent.

FR3704   **Aspects des cultures francophones internationals**   **3 ch (3C)**

Ce cours décrit les changements récents dans les cultures francophones d'Afrique et des Caraïbes dans contexte post-colonial et leurs rapports avec la France. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3704   **Aspects of World Francophone Cultures**   **3 ch (3C)**

This course will expose recent changes in Francophone countries, mainly African and Caribbean, and their cultural relationships with France in the post-colonial context. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3714   **Aspects des cultures acadienne et franco-ontarienne**   **3 ch (3C)**

À titre de cultures minoritaires au Canada, acadiens et franco-ontariens ont développé des identités distinctes. Des origines à nos jours, ce cours porte une attention particulière sur les réalités historiques, sociales et artistiques de ces cultures. *Prérequis*: FR 2204 ou FR 2304, ou équivalent.

FR3714   **Aspects of Acadian and Franco-Ontario Cultures**   **3 ch (3C)**

As French cultural minorities in Canada, Acadians and Franco-Ontarians have developed distinctive identifies. From their origins to the present,

attention will be given to the historical, social and artistic expressions of these cultures. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3724   **Aspects de la culture Quebecoise**   **3 ch (3C)**

Ce cours porte sur de multiples aspects de la culture québécoise, en particulier l'histoire, la géographie, la langue, la religion, le folklore, la musique, la chanson, l'éducation, le mouvement des idées et la littérature. Attention spéciale portée sur les grandes questions dans le Québec contemporain. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3724   **Aspects of Quebec Culture**   **3 ch (3C)**

This course examines the multiple aspects of Quebec culture focusing on the history, geography, language, religion, folklore, music, songs, education, intellectual movements and literary works. Special attention will be given to contemporary issues in the Quebec society. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3734   **Litterature francophone et Cinema**   **3 ch (3C)**

Ce cours porte sur les interactions entre l'oeuvre littéraire francophone et son adaptation cinématographique. Il consiste particulierement en une analyse comparative des séquences narratives, de la représentation et de l'interprétation. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3734   **Language of Francophone Literature and Cinema**   **3 ch (3C)**

This course examines the correlation between francophone literary works and their cinematic adaptations. Particular attention is given to the comparative analysis of narrative sequences, representation and interpretation. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3744   **Media Texts and the Francophone World**   **3 ch (3C)**

Based on a corpus of study combining journal articles gleaned from the French press and samplings taken from French television and radio broadcasting, the course proposes an examination of Francophone cultures through analysis of media language, communication strategies and socio-ideological/aesthetic tendencies. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3744   **La Francophonie et les medias**   **3 ch (3C)**

Ce cours examine la diversité culturelle d'expression française à partir d'un corpus d'articles tirés de journaux, de revues et de sites internet, et d'enregistrements sonores et visuelles authentiques dans la perspective d'une analyse de ses principales tendances idéologiques, esthétiques et sociales. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3814   **L'expression littéraire au Canada français**   **3 ch (3C)**

Étude d'auteurs canadiens-français, principalement de romanciers. Analyse de l'évolution historique, sociale et idéologique des procédés narratifs et du contenu des oeuvres, de 1950 à nos jours. Initiation à la narratologie. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3814   **Language of French Canadian Fiction**   **3 ch (3C)**

A study of selected French Canadian authors, particularly novelists. The course proposes to analyze the historical, sociological and ideological evolution of literary content and narrative process, language strategies, from 1950 to the present. Basic concepts in narratology will be introduced. *Prerequisites:* FR 2204 or FR 2304, or equivalent.

FR3824   **Le théâtre au Canada français**   **3 ch (3C)**

De Gratien Gélinas a Robert Lepage, le théâtre canadien-français a évolué d'une expression de l'identité collective vers une recherche plus orientée sur le langage dramatique. Dans ce contexte, les oeuvres des principaux dramaturges seront analysées. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3824   **Language of French Canadian Drama**   **3 ch (3C)**

From Gratien Gélinas to Robert Lepage, French Canadian drama has evolved from the expression of cultural identity to research into the language of drama, gradually emphasizing the relationship of dramatic language and content. In this context, the works of major dramatists will be reviewed. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3844   **Michel Tremblay et son temps**   **3 ch (3C)**

Auteur reconnu internationalement, Michel Tremblay a consacré l'importance de la culture populaire dans la littérature québécoise dans les années 60. Du Cycle des Belles-Soeurs aux Chroniques du Plateau Mont-Royal, ce cours analyse la consécration de ce jeune classique et son influence dans la société. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR3844   **Michel Tremblay and His Time**   **3 ch (3C)**

Internationally acclaimed for Les Belles-Soeurs, Michel Tremblay consecrated the cultural importance of « joual» (popular language) in the «quebecois» literature of the late 1960's. Through a selection of his works

in drama, autobiography, short stories, movies and novels, this course will review the making of this young «classic» and the influence of this author on society. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR4203   **Le Français en context**   **3 ch (3C)**

Destine a reproduire des situations de la vie quotidienne et d'enjeux contemporains afin de motiver l'etudiant a elargir ses connaissances de niveau avance et a en faire usage dans diverses conditions. *Prerequis:* FR 3203 ou FR 3204 ou equivalent.

FR4203   **French in Context**   **3 ch (3C)**

Designed around everyday life and contemporary topics that will motivate students to expand their advanced language skills and make use of them in complex ideas and diverse situations. *Prerequisites:* FR 3203, FR 3204 or equivalent.

FR4204   **Parfaire l'oral et l'écrit**   **3 ch (3C)**

Destiné à développer une connaissance plus authentique du français par ses expressions idiomatiques et ses vocabulaires spécifiques. Ce cours s'adresse particulièrement aux étudiants désireux de faciliter leur intégration dans un environnement bilingue. *Prérequis:* FR 3203 ou FR 3204, ou équivalent.

FR4204   **Perfecting Oral and Written Skills**   **3 ch (3C)**

Designed to develop a more idiomatic and authentic knowledge of French through active learning and application of more specific vocabulary. This course will prepare students to function effectively in a bilingual work place. *Prerequisites:* FR 3203, FR 3204 or equivalent.

FR4324   **Traduction II**   **3 ch (3C)**

Exploration avancée des différences linguistiques par la traduction de documents authentiques de l'anglais vers le français. *Prérequis:* FR 3324 ou equivalent

FR4324   **Cross-Linguistic Communication II**   **3 ch (3C)**

Intended to explore cross-communication differences by translation of authentic texts into French - macro level. *Prerequisite:* FR 3324 or equivalent.

FR4514   **Special Topics in French Literature**   **3 ch (3S)**

A study of emerging themes in literary works of the French speaking world. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR4514   **Thèmes en littérature d'expression française**   **3 ch (3S)**

Étude des problématiques particulières dans les oeuvres littéraires de la Francophonie. *Prérequis:* FR 2204 ou FR 2304, ou équivalent.

FR4524   **Literary Criticism in French**   **3 ch (3S)**

Literary theory applied to the works of Francophone authors. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR4524   **Critique littéraire**   **3 ch (3S)**

Étude de théories littéraires appliquées aux oeuvres d'auteurs d'expression française. *Prérequis:* FR 2204 ou FR 2304, ou equivalent.

FR4534   **Films francophones et perspectives postcoloniales (A)**   **3 ch (3C)**

Le cours porte sur les nouvelles tendances dans les films francophones de la période postcoloniale (Maghreb, Afrique subsaharienne et Antilles françaises). Tout en analysant de façon critique les polarisations traditionnelles héritées de l'époque coloniale, les fims choisis illustrent les nouveaux genres, themes et styles qui incarnent les complexités et les défies nouveaux dans un monde francophone soumis aux exigences de la mondialisation. *Prérequis:* FR 2204 ou FR 2304, ou avec la permission du professor.

FR4534   **Francophone Films & Postcolonial Perspectives (A)**   **3 ch (3C)**

This course examines the new trends in postcolonial francophone films (North and sub-Saharan Africa, French Caribbean). While critiquing traditional binaries and polarities inherited from the colonial era, the chosen films expose new genres, themes and styles which embody the complexities and the challenges of the Francophone World in a global context. *Prerequisite:* FR 2204 or FR 2304, or permission of the instructor.

FR4544   **Aspects du Cinema dans la France contemporaine**   **3 ch**

Par une selection de films representatifs, ce cours examine les theme majeurs, les styles et les auditoires vises par les cineastes aujourd'hui. Il decrit la societe francaise du XXIe siecle, dans ses preoccupations quotidiennes, ses ideaux culturels et ses rapports au monde exterieur. *Prérequis:* FR 2204, FR 2304 ou equivalent.

FR4544   **Aspects of Cinema in Contemporary France**   **3 ch**

Through a selection of representative films, this course examines major themes, styles and audiences targeted by filmmakers as well as the

representations of current preoccupations, cultural ideals and global connections of French society in the 21st century. *Prerequisite:* FR 2204, FR 2304 or equivalent.

GENDER STUDIES

GEND2001   **Introduction to Gender Studies**   **3 ch**

An introduction to Gender Studies with an emphasis on interdisciplinary perspectives. Examines basic concepts, approaches, and methods pertinent to understanding gender relations and divisions in a global and historical context. **NOTE**: Normally students take this course after successful completion of 10 term-courses (30 ch). Students who take GEND 2001 may not receive credit for SOCI 2501.

GEND4001   **Directed Studies**   **3 ch**

Supervised study in some area of Gender Studies to be determined by the student and instructor in consultation with the Gender Studies Coordinator. *Prerequisites:* GEND 2001 and 9 additional ch of Gender Studies eligible courses.

GEODESY AND GEOMATICS ENGINEERING

GGE1001   **Introduction to Geodesy and Geomatics**   **5 ch (3C 3L)**

Introductory geodesy and geomatics. Plane surveying techniques. Creation of topographic plans from electronic total stations. Non ground-based positioning methods including LiDAR and GPS. Remote sensing imagery. Introductory uncertainty & estimations of theory. Applications of Geographic Information Systems. Answering spatial questions using software.

GEOGRAPHY

GEOG1001   **Introduction to Human Geography**   **3 ch (C O)**

Introduces sub-fields of human geography - including cultural, historical, economic, environmental, and regional geography.

GEOG2001   **Introduction to Regional Geography of Canada**   **3 ch (3C)**

This course offers a general introduction to the regional geography of Canada. Emphasis will be placed upon regional variations in population distribution, elements of the natural environment and resource use. To understand Canada's present landscape, some aspects of the historical evolution of each region will be explored. *Prerequisites:* none

GEOLOGY

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

GEOL1044   **The Earth: Its Origin and Evolution**   **5 ch (3C 3L)**

Basic geological concepts, geological time, material of the earth's crust, igneous, sedimentary and metamorphic rocks, earthquakes, evolution of continents and ocean basins, sea-floor spreading and plate tectonics, coastlines.

GEOL1074   **Earth Processes, Resources and the Environment**   **5 ch (3C 3L)**

Structural geology, origin and evolution of life from fossils, geomorphology of landforms, mineral resources and fossil fuels, environmental geology, hydrology, engineering geology. *Prerequisites:* GEOL 1044.

GEOL2131   **Crystallography and Mineralogy**   **5 ch (2C 4L)**

Fundamentals of crystallography and the classification, identification, occurrence and origin of the major rock and ore-forming minerals. Concludes by defining sedimentary, igneous and metamorphic rocks in terms of mineral assemblages. *Prerequisite:* GEOL 1044/GEOL 1074

GEOL2142   **Optical Mineralogy and Petrography**   **5 ch (2C 4L)**

Fundamental polarizing microscope techniques as applied to the identification of crystalline materials. Systematic study of the composition, phase relations and occurrence of rock-forming minerals with an emphasis on their identification in thin section as individuals and as members of mineral assemblages. *Prerequisite:* GEOL 2131.

GEOL2201   **Biogeology I (Systematic Paleontology)**   **5 ch (3C 2L)**

Morphology, paleoecology and biostratigraphy of selected groups of marine invertebrates represented in the fossil record; comparisons with modern invertebrates in present-day oceans stressed.

GEOL2212   **Sedimentology I**   **5 ch (3C 2L)**

Sedimentary structures, principles of sedimentation, selected sedimentary environments, with emphasis on marine environments, comparison of present-day models with occurrences in the geological record.

GEOL2262   **Earth, and the Composition of Our World**   **5 ch (3C 3L)**

This integrative, multi-disciplinary course explores the links between our physical, biological and cultural worlds. It examines how elements are grouped by similarities of properties, and how these are expressed in the minerals and rocks that we see and interact with. It then addresses the use of these properties by plant and animal life, and how these physical constituents of our world have influenced aspects of human life, such as prehistory, history, economics, industry, music, stories and myths. Lab sessions are an integral part of the course, giving students the opportunity to experience how earth materials are extracted, used and celebrated. **NOTE**: This course is open to students of all faculties and is also suitable for students wishing to minor in Geology. *Prerequisite:* Successful completion of at least 30 ch, or permission of instructor.

GEOL2321   **Structural Geology I**   **5 ch (3C 3L)**

Emphasis on the description and classification of folds, cleavages, lineations, joints and faults. Presentation of structural data. Use of primary structures. Salt tectonics. Structure of igneous rocks. Laboratories include stereographic projection, interpretation of geological maps and preparation of geological cross sections.

GEOL2703   **Field School**   **6 ch**

Principles of stratigraphic mapping. *Prerequisite:* GEOL 1044/GEOL 1074.

GEOL3102   **Introduction to Geoarchaeology**   **5 ch (3C 3L)**

Provides an overview of and practical experience with geological techniques used in archaeology, examining the influence of geology on human societies, on the preservation of archaeological sites, and on the potential for re-discovery of those sites. Lectures and laboratory will examine dating methods, alluvial sediments, coastal erosion or buildup, soils, stone tool and other raw materials, the post-depositional evolution of archaeological sites, and palaeo-environments. *Prerequisite:* At least one course in Geology (GEOL), or SCI 1862.

GEOL3103   **Techniques of Thin-Section Petroscopy for Geoarchaeology (O)**   **4 ch (3C 3L)**

This is a lab-based course aimed at providing students with theory, background, and practice necessary for them to be able to take a set of thin sections of rocks, describe them, and use them to answer a research question related to geoarcheology. Enrolment is limited to 8 participants. *Prerequisite:* At least 10 ch of Geology (Geol 1044 and Geol 1074, or equivalent), or permission of the instructor. Preference may be given to students who have successfully completed Geol 3102, Introduction to Geoarchaeology.

GEOL3222   **Biota-Substrate Relationships**   **3 ch (3C)**

Relationships between various substrate types, mainly in subtidal marine environments, and benthic biotas they support, with examples drawn mainly from Atlantic (temperate and sub-tropical) and Mediterranean areas. Comparisons between present-day relationships and those from fossil record are made.

GEOL3442   **Environmental Geology**   **3 ch (3C)**

The role of Geology in the management of our environment. Issues examined may include natural hazards; soil, water, mineral and energy resources; contamination; global systems and change. *Prerequisites:* GEOL 1044 or approved equivalent.

GERMAN

GER1003   **Basic German**   **3 ch**

How Germans pronounce and order their words in questions, answers, commands and various sentence structures. Original German videos and Canadian content improve understanding and motivation.

GER1004   **Improving Basic German**   **3 ch**

Continues the study of the basic elements of German with a Canadian emphasis. Creative oral and written work on subjects chosen by the students is strongly encouraged. Extensive use of audio-visual materials. *Prerequisite:* GER 1003 or equivalent.

GER1063   **Spoken German**   **3 ch**

Concentrates on the development of conversational skills appropriate to student's stated needs. Extensive use of audio-visual materials. **NOTE**: Similar to UNBF course GER 1013 Spoken German I.

GER2003   **Creative German**   **3 ch**

Continues to develop the students' ability to read, write, speak and understand German. Emphasizes oral and written production on subjects chosen by students. Uses shorter German original texts and audio-visual materials. Taught in German and English. *Prerequisites:* GER 1003 and one of GER 1004, GER 1063, GER 1133 or equivalent.

GER2004   Reading German Literature in German   3 ch

Selected short stories in German, e.g., Ebner-Eschenbach, Kafka, Brecht, Böll, Dürrenmatt and students' choices. Taught mainly in German. *Prerequisite:* GER 2003 or equivalent.

GER2133   The Contributions of German-Speaking People   3 ch

Examines the contributions to arts, culture, literature science and ideas of selected German-speaking individuals from past and present times. Taught in English.

GER3003 Literature in German in Translation I (18th/19th Century)   3 ch

Examines selected works of the enlightenment and the storm and stress, classical, romantic and realistic periods, and their contribution to world literature. Taught in English.

GER3004   Lit. in German in Translation II (20th Century)   3 ch

Examines important Swiss, Austrian, and German authors and their contribution to world literature. This includes Hesse, Kafka, Brecht, Böll Grass, Hochhuth, Dürrenmatt and Frisch and film versions of the works whenever possible. Taught in English.

GREEK

GRK1001   Introductory Ancient Greek I   3 ch

A beginner's course in Ancient Greek. No previous knowledge of Greek is required.

GRK1002   Introductory Ancient Greek II   3 ch

A continuation of GRK 1001.

HEALTH

HEAL1001   Current Issues and Future Trends in Health   3 ch (3C)

This course introduces current issues and future trends in Health, with a focus on medical, societal, business, and ethical implications. Students will examine how health issues are shaped by interrelated factors across different sectors and have opportunities to integrate and apply evidence-informed knowledge to formulate and articulate a reasoned position about current health issues and future trends.

HEAL1002   Introduction to Health from a Global Perspective   3 ch (3C)

This course examines theories of interpersonal, organizational, and mass communication relevant to the health and health-related professions. Students will review theories and contexts of communication, relations of power in communication settings, strategies or persuasion, the relationship between attitudes and behaviour, and the importance or representation in our understanding of changing nature of health, health delivery, and health issues in society. Health ethics and approaches to communicating about health, including ambiguity, privacy, and confidentiality, will be discussed.

HEAL2001 Health Communications (Cross-Listed: COMS 2201) 3 ch (3C)

Health communication is the study of messages that create meaning in relation to physical, mental and social well-being. Interdisciplinary research is conducted in the scientific, interpretive (humanities) and critical-cultural traditions. This course examines theories of interpersonal, organizational, and mass communication relevant to a variety of professionals in the health field. Students will review theories and contexts of communication (interpersonal, organizational, mass, social media and intercultural), relations of power in communication settings, strategies of persuasion, the relationship between attitudes and behaviour, and the importance of representation in our understanding of changing nature of health, health delivery and health issues in society. Students cannot take both COMS 2201 and HEAL 2001. Students in the Bachelor of Health cannot take COMS 2201.

HEAL2002   Introduction to Data Analytics & Health Information 3 ch (3C)

This course introduces the role that the data analytics plays in health organizations. Students will gain basic knowledge for doing simple data manipulation, querying, and visualization. They will then see the possibilities in data analytics, including key components of the data analytics process and case studies where it was applied, with the goal of being able to work with a data scientist on more complex data analytics projects. The ethical approaches to handling medial information will also be discussed. The course is not IT-intensive but requires basic proficiency in Excel. *Prerequisites:* HEAL 1001, HEAL 1002, and STAT 2263; or permission of the instructor.

**HEAL2003   Methods in Health Research and   3 ch (3C 2L)
                Information Literacy**

This course is an introduction to fundamental concepts in health research, including the purpose, process, and utilization of health research. Students will be exposed to the research designs and data analysis methods commonly used by health researchers, including qualitative,

quantitatve (including inferential methods such as regression), mixed methods, and systematic reviews. Topics will include evidence-based practice, health research ethics, information literacy, and knowledge translation. This course will build students' knowledge of interdisciplinary information literacy principles with a focus on health research. *Prerequisite:* STAT 2263, HEAL 1001, and HEAL 1002; or permission of the instructor.

**HEAL3001   History and Structure of the Canadian Health   3 ch (3C)
                Care System**

The course focuses on the history and structure of the Canadian health care system, including how health care is organized, funded, regulated, and managed at provincial and federal levels in Canada. This course also examines current service delivery issues as they influence the health of Canadians. *Pre-or Co-Requisites:* HEAL 2001, HEAL 2002, and HEAL 2003; or permission of the instructor. NOTE: Credit will only be given to one of HEAL 3001, HSCI 3061, or NURS 3061.

HEAL3002   Indigenous Health Determinants   3 ch (3C)

This course provides a multidisciplinary approach to health and wellness focusing on Indigenous Peoples. Topics such as Indigenous Ways of Knowing and social determinants of health/wellness will be examined, including an examination of the effect of colonialism and the current western health care system on indigenous peoples. Practical/ethical responsibilities of health care providers to Indigenous Peoples will also be addressed. *Prerequisites:* HEAL 3001, and HIST 2514 or ABRG 1002; or permission of the instructor.

HEAL3003   Interdisciplinary Perspectives of Health   3 ch (3C)

Students explore topics relevant to health using an interdisciplinary lens. There is a focus on applications to health topics that have relevance to societal, management, and biomedical sciences, such as medical ethics, public health, and health literacy as well as the societal, biomedical, and management impact of specific diseases. *Prerequisites:* HEAL 1001 or HSCI 2001 and completion of 60 ch.

**HEAL3101   Molecular and Cellular Basis of Cancer   3 ch (3C)
                (Cross-Listed: BIOL 3101)**

Cancer is a common disease that affects a multitude of families and health practitioners globally every day. Using cancer as a model, students will examine the molecular and cellular approach to the study of disease. Students will have the chance to explore cancer epidemiology, etiology, pathogenesis, diagnosis, and treatment from a biomedical perspective. *Prerequisites:* Two of the following: BIOL 2015, BIOL 2065, BIOL 2245, BIOL 2485, or permission of the instructor.

**HEAL3102   Clinical Neuorpsychology   3 ch (3C)
                (Cross-Listed: PSYC 3724)**

Explores the neuropsychological sequelae of the most common neurological and psychiatric disorders seen in the practice of clinical neuropsychology, including vascular disorders, traumatic head injuries, epilepsy, tumours, multiple sclerosis, anxiety, depression, schizophrenia, dementia, and neurodegenerative conditions such as Alzheimer's disease. *Prerequisites:* PSYC 2711 or PSYC 3723 or permission of the instructor.

HEAL3103   Neurobiology of Learning   3 ch (3C)

In this course students explore the process of memory and corresponding anatomic regions of the brain that are involved in learning and memory. The current understanding of the neurobiology of learning and memory is examined in a series of of podcasts, webinars, and interactive workshops. Required neuroanatomy linked with memory, attention, consolidation, recall, and cognitive load is reviewed. Students are expected to apply course concepts to their individual areas of interest. *Prerequisites:* PSYC 2712 and one of BIOL 1415, BIOL 2015, BIOL 2065, BIOL 2245, BIOL 2485, or permission of the instructor.

**HEAL4001   Transformation Through Collaboration   3 ch (3C)
                & Innovation I**

This course explores both collaboration and innovation at the intersction of the three majors in the Bachelor of Health degree (namely, Society and Health, Management in Health, and Biomedical Sciences and Health). This intergrated disciplinary course interweaves personal development and growth with problem framing and solving skills, and diverse-team collaboration. This is the first course of a course pair in which students will formulate a plan to address a health problem or issue. *Prerequisite:* HEAL 2001 and HEAL 3002; or permission of the instructor.

**HEAL4002   Transformation Through Collaboration   3 ch (3C)
                & Innovation II**

This course is a continuation of HEAL 4001 and, in this course students will implement the plan/analysis developed in HEAL 4001 and conduct the additional secondary (and possibly primary) research in support of the development of specific recommendations designed to address this

identified gap/health issue. The focus on this course will be on the implementation of specific health strategies. *Prerequisite:* HEAL 4001; or permission of the instructor.

HEAL4004   **Honours Research Seminar**   **3 ch (3C)**

This course will expose students to advanced topics in Health Research. It includes an in-depth exploration of research ethics, both human and animal, as well as quantitative and qualitative research design strategies. Furthermore, students will learn vital data analytic strategies in addition to effective written and oral communication skills. This course will provide Bachelor of Health Honours students with the skills they will need to conduct accurate research in Health-related fields. *Prerequisite:* Admission to the Bachelor of Health Honours program. *Co-requisite:* HEAL 4005.

HEAL4005   **Designing a Research Proposal**   **3 ch (3C)**

This course gives students the unique opportunity to work closely with a supervisor within the discipline, as well as a second reader, to develop their thesis proposal in a health-related subject. Completed proposals will be presented to, and approved by, the Bachelor of Health Advisory Group. Students will earn hands on experience with research and academic project planning in their chosen subject. *Prerequisite:* Admission to the Bachelor of Health Honours program. *Co-requisite:* HEAL 4004.

HEAL4006   **Honours Thesis**   **3 ch (3C)**

Honours students will work closely with their supervisor and second reader to conduct thesis research and will begin compiling data. This course will provide students with the chance to conduct hands-on research within their chosen subject; at the end of term, students are required to submit a written thesis and present their research findings to the Bachelor of Health Advisory Group. *Prerequisite:* B+ in HEAL 4005.

HEAL4011   **Advanced Topics in Health**   **3 ch (3C)**

An interdisciplinary lens is used to explore the impact of disease and other current topics related to health, such as global health, epidemiology, and health policy analysis. Through in-depth discussions and analysis, students develop their knowledge in advanced topics while also enhancing communication skills through various presentations and research. *Prerequisite:* HEAL 3003 and completion of 90 ch.

HEAL4101 Advanced Topics in Biomedical Sciences and Health 3 ch (3C)

This course provides Biomedical Science and Health Majors with the opportunity to assess and critically review peer-reviewed literature that highlights the biochemistry, molecular and cellular biology, as well as physiology, tht underlie various health and disease states. Topics will range from immunology, virology, microbiology, the molecular basis of disease, immunopathology, cancer biology, cardiovascular health and disease, and pharmacology. *Prerequisite:* Completion of 90 ch; Biomedical Science and Health major, or permission of the instructor.

HEAL4102   **Neuroplasticity (Cross-Listed: PSYC 4712)**   **3 ch (3C)**

A seminar course exploring the topic of plasticity within the central nervous system. Neuroplasticity will be discussed at a variety of levels, from individual neurons to large-scale brain changes, and with reference to learning and memory, neuropathology, lifestyle, and other factors. *Prerequisite:* PSYC 3712 or PSYC 3723, or permission of the instructor.

HEAL4103   **The Impact of Epilepsy on Quality of Life**   **3 ch (3C)**

A variety of teaching methods are used to explore the diagnosis of epilepsy across the lifespan and how it impacts quality of life. Students learn about the epidemiology of epilepsy, the classification of seizures, the goals of treatment and the psychosocial impact of the disorder at different ages. *Prerequisite:* PSYC 2712 and one of BIOL 1415, BIOL 2015, BIOL 2065, BIOL 2245, BIOL 2485, or permission of the instructor.

HEAL4301   **Advanced Topics in Society and Health**   **3 ch (3C)**

This seminar course provides Society and Health majors a forum to participate in an in-depth discussion and analysis of current issues pertaining to community and societal health. Through a variety of topics and discussions, students will expand on their pre-existing knowledge of the Social Determinants of Health. Topics discussed will vary year to year in an effort to stay up-to-date on current trends in social justice, health promotion, and health equity. *Prerequisite:* Completion of 90 ch; Society and Health major, or permission of the instructor.

HEAL4501   **Advanced Topics in Management in Health**   **3 ch (3C)**

This seminar course provides Management in Health majors a forum to pursue in-depth discussions and analyses of current issues pertaining to community and societal health and relevant to the management of health. Topics will range from healthcare regulation and marketing to human resources and training. Specific topics will vary from year to year to reflect current trends in health management. *Prerequisite:* Completion of 90 ch; Management in Health major, or permission of the instructor.

HEALTH SCIENCES

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

HSCI2001   **Introduction to Health**   **3 ch**

Introduces the concept of health and its multidimensional nature. Examines health and its determinants, including those policy decisions that shape it. Draws from the contributions of the behavioural, physical and social sciences and the economic and political processes that influence health. Introduces the Canadian Health Care system and compares it to those utilized in other developed countries. Considers interdisciplinary aspects of health.

HSCI3032   **Interprofessional Communication**   **3 ch (3C)**
                        (Cross-Listed: NURS 3032)

Facets of knowledge, values/attitudes and skills are applied to core interprofessional education and practice competencies: role clarification and affirmation; effective communication and conflict management; participatory planning, decision making and problem solving; and, self-awareness and reflective practices. *Prerequisite:* BHS students - successful completion of year 1 BSc courses or CMA certification in Radiography, Radiation Therapy, Nuclear Medicine, or Respiratory Therapy.

HSCI3061   **Issues in the Canadian Health Care System**   **3 ch (2C)**
                        (Cross-Listed: NURS 3061)

This course focuses on the history and organization of the Health Care System and discusses current health care issues. *Pre- or Co-requisite:* HSCI 3092. **NOTE**: Credit will be given only to one of HSCI 3061 and NURS 3061. This course is open to non-BHS students with Instructor's permission.

HSCI3092   **Health Science Research**   **3 ch (3C)**
                        (Cross-Listed: NURS 3092)

Introduces the purpose, process and utilization of health science research. The interrelationships among theory, practice and research are explored. Students critique research studies. (For Health Science (BHS) students only.) **NOTE**: Credit will only be given to one of HSCI 3092 and NURS 3092. *Co-requisite:* STAT 2263 or approved substitute.

HSCI4142   **Issues and Leadership in Healthcare**   **3 ch (3C)**
                        (Cross-Listed: NURS 4142)

Explores professional health care practice issues and trends. Examines organizational theory and leadership roles of health care professionals. Explores the foundations of professional development and practice. **NOTE:** Credit will only be given only to one of HSCI 4142 and NURS 4142.

HISTORY & ENGLISH

HENG4000   **Honours Thesis**   **6 ch [W]**

Honours thesis for Joint Honours Programme in English and History. *Prerequisite:* Acceptance into the Joint Honours Programme in English and History.

HISTORY

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

HIST1101   **European Experience**   **3 ch (3C) [W]**

The course will introduce students to the history of continental Europe and the goals and methods of historical studies. A flexible set of lectures, discussion periods and assignments will explore, social, cultural, economic, and political issues illustrative of a wide range of European experiences, as well as the central role of this continent in the shaping of our contemporary world.

HIST1301   **Canadian Historical Issues**   **3 ch (3C) [W]**

This course is designed to introduce students to the methodology and techniques of historical study. It will focus on the historical background to current issues in Canadian society, culture and politics.

HIST1401   **The American Experience**   **3 ch (3C) [W]**

HIST 1401 is an introductory course focusing on American Social History. Through lecture, discussion and written assignments, students will examine questions about how men and women make history, as well as questions about how history is shaped by those writing it. This course will offer students an opportunity to do historical research, improve communication skills, and develop a critical scholarly approach.

HIST1601   **Global History**   **3 ch (3C) [W]**

Examines the global history of empire and capitalism from roughly 1492 to the present.

HIST2101   Europe & the World before 1800   3 ch (3C) [W]

A survey of important historical events prior to the modern age.

HIST2102   Europe & World after 1800   3 ch (3C) [W]

A survey of important historical events in the modern era. Completion of HIST 2101 is recommended but not required.

HIST2511   The History and Politics of Latin American   3 ch (3C) [W]
                     (Cross-Listed: POLS 2311)

Provides an overview of Latin American history and politics from colonialization to the 20th century.

HIST2514   First Nations in North America to the   3 ch (3C) [W]
                     War of 1812

This course will focus on the history of Indigenous Peoples in the context of early European exploration, the fur trade, missionization, and colonial policies.

HIST2515   First Nations in North America since 1800   3 ch (3C) [W]

A History of First Nations focusing on economic, political, social, and cultural developments in the post-colonial context.

HIST3153   Britain in the Age of the World Wars   3 ch (3C) [W]

Examines the impact of the First and Second World Wars on British history, both on the battlefield and on the home front, with an emphasis on how total war transformed the economy, politics, religion and society.

HIST3301   Canadian History Before Confederation   3 ch (3C) [W]

A survey of Canadian history from the age of exploration through the Colonial era to the British North America Act of 1867.

HIST3302   Canadian History Since Confederation   3 ch (3C) [W]

A survey from 1867 of western expansion, the growth of an industrial society, the wars of the 20th century to the re-examination of Confederation of the late 20th century.

HIST3404   U.S. History: Colony to Nation   3 ch (3C) [W]

A general survey examining topics such as Puritan New England, native peoples and colonists, slavery, the American Revolution, and nationalism.

HIST3405   U.S History: Since Independence   3 ch (3C) [W]

A general survey from the Revolution to the present examining topics such as territorial expansion, the Civil War, the Rise of corporate America, protest and reform movements, and the US in international affairs.

HIST3505   History of Reform in Modern America (O)   3 ch (3C) [W]
The political and social struggle of Populists, Progressives, New Dealers and Radicals are the focal points of this survey. *Prerequisite:* Courses at this level are suitable for students from any discipline who have completed at least twenty term-courses. Students should normally have completed at least one term-course in History.

HIST3555   History of the Atlantic World (A)   3 ch (3C) [W]

History of the Atlantic slave trade, plantation societies in the Caribbean region, Atlantic trade networks, the abolition of Atlantic slavery, and emancipation.

HIST3577   The History of the Caribbean Since 1492 (O)   3 ch (3C) [W]

A broad social, political, and economic overview of the Caribbean since 1942.

HIST3591   Latin American Revolutions   3 ch (3C) [W]
                     (Cross-Listed: POLS 3344)

Examines the origins and course of Latin American revolutions, especially the Mexican and Cuban revolution.

HIST 3813   Renaissance Popes   3 ch (3C) [W]

Examines the institution of the papacy and individual popes from Avigon period to the Catholic Reformation, a period when the institution and the pontiffs came under increasing scrutiny and criticism for corruption and sinful behaviour. Also explores how the papacy, after the excesses of the Renaissance, began to tackle the challenges of internal reform and global expansion.

HIST3977   Sex, Drugs, and Rock & Roll: 3 ch (3C) [W]
                     the 1960s in Historical Perspective

Examines the cultural, political and historical significance of the 1960s.

HIST4009   Women in European History (O)   3 ch (3C) [W]
A survey of the changing roles of women from the Middle Ages through modern industrialization. Studies major texts defining woman's place in European society. Specific topics include attitudes to women, family and work patterns, education, and emerging public roles.

HIST4011   Early Modern Queens   3 ch (3C) [W]

Explores the roles of queen consorts, queen mothers, and queens regnant who wielded power directly and indirectly in early modern Europe.

HIST4106   The Rise of Fascism and Nazism in Europe   3 ch (3C) [W]
                     1890s to 1945 (O)

Examines nationalism, imperialism, antisemitism and biological racism.

HIST4109   War and Genocide: The Holocaust   3 ch (3C) [W]

Explores the development, implementation and impact of the Nazis "Final Solution" of the Jewish question during World War II.

HIST4202   England Under the Tudors (O)   3 ch (3C) [W]

Examines the events and conditions in England during the Tudor dynasty, 1485-1603, focusing on political, religious, intellectual, economic and social issues.

HIST4203   England Under the Stuarts   3 ch (3C) [W]

Examines the changing political, intellectual, religious and social conditions in England from the reign of James I in 1603 to the end of the Glorious Revolution in 1688-89.

HIST4205   Britain, 1688-1760: The Age of Oligarchy (A)   3 ch (3C) [W]

Analyzes the Glorious Revolution, the intellectual revolution of the late 17th century, the emergence of Britain as a military power, the union with Scotland, the Agricultural Revolution, the beginnings of the Industrial Revolution, the Whig oligarchy and the social development and the cultural transformation of the period.

HIST4221   Elizabeth I   3 ch (3C) [W]

This upper level course focuses on the major themes in the life of Queen Elizabeth I, one of the most famous and mythological women in history. We will attempt to sort through the legacy of her father, Henry VIII, and ascertain the reasons for the fall of her mother, Anne Boleyn. We explore her turbulent relationship with her sister, Mary, which resulted in Elizabeth's stay in the Tower of London as a suspected traitor. From there we will examine some of the predominant themes in her reign: finding and preserving a religious settlement for the Church of England, her gender as both a "plus and a minus", the Elizabeth court, her relationship with Mary, Queen of Scots, her fashioning of her image and how her reputation has been perceived subsequently.

HIST4303   Women in Canadian History (O)   3 ch (3C) [W]

Topics such as education, work and family, suffrage and women's rights, sexuality and social reform, as well as feminism will be studied. Primary sources and gender theory will be examined.

HIST4311   Canada-U.S. Relations 1867-1945 (A)   3 ch (3C) [W]

Examines the major themes in Canada-United States relations from Confederation until the end of World War II, specifically trade, diplomacy, military relations, and cultural issues, including how Americans and Canadians viewed each other's societies.

HIST4313 Canada-United States Relations Since 1945 (A)   3 ch (3C) [W]

This course examines Canadian-American Relations from 1945 to the Mulroney-Reagan era. It explores diplomatic, defense, economic, cultural and environmental issues.

HIST4337   Alcohol, Drugs and Tobacco in North America   3 ch (3C) [W]

Examines the social history of alcohol, illegal drugs and tobacco in Canada and the United States, as well as state regulation and expert, medical and criminal justice responses to these substances.

HIST4361   Atlantic Provinces 1497-1784 (A)   3 ch (3C) [W]

A history of the Atlantic region of Canada from the time of earliest European explorations to the formation of the second Empire in North America.

HIST4371   Murder in Canada: A Social and Legal History   3 ch (3C) [W]

Examines the legal and expert response to homicide, patterns of homicide and the issue of capital punishment, from the colonial to the modern era.

HIST4377   Social History of Crime in Canada (O)   3 ch (3C) [W]

Examines how Canadian society has perceived and reacted to crime and criminals from early Colonial times to the mid-twentieth century.

HIST4381   The Family and the State in North America (O)   3 ch (3C) [W]

Examines the economic and social functions of the family in the transition from pre-industrial to industrial society. Topics include the religious underpinnings of the family, gender relations, the role of laws and state regulation, the impact of social policy and the emergence of a North American "politics of the family".

HIST4382   The City in North America (O)   3 ch (3C) [W]

Examines the development of the commercial, industrial, and post-industrial city in North America.

HIST4383   Police and Society in North America (O)   3 ch (3C) [W]

Examines the development of the "new Police" and its relationship to 19th and 20th century North American society. Themes include the European origins of policing, police reform, professionalization, labour relations, relations with minorities, political policing and private security.

HIST4386   Canadian Criminal Justice System (O)   3 ch (3C) [W]

An examination of the Canadian criminal justice system with an emphasis on criminal law, courts, police and corrections from the Colonial era to the mid-twentieth century.

HIST4471   Indigenous Peoples in America   3 ch (2C 1S) [W]
before 1800 (A)

This course will focus on the history of Native People in the post-contact period. Relationships based on missions, the fur trade, and colonization will be examined.

HIST4473   Native People in United States after 1800 (A)   3 ch (2C 1S) [W]

This course will focus on government policies pertaining to Native People, beginning in the early National period. The history of Natives and Newcomers in the nineteenth century will be emphasized, although twentieth century issues will also be examined.

HIST4475   The American South (A)   3 ch (2C 1S) [W]

Beginning with the arrival of the first settlers and their relationship with aboriginal peoples, through the development of a distinctive culture and society based on slavery, HIST 4475 will focus on social, intellectual, economic and political themes in southern history.

HIST4945   Women, Science and Medicine (A)   3 ch (3C) [W]

Focuses on the relationship between gender and science. Women's participation in science and medicine will be examined, as well as the philosophical and empirical underpinnings of science and medicine. Contemporary issues will be discussed, but the focus is historical, beginning with Aristotelian science and Hippocratic medicine.

HIST4985   The Revolutionary Experience I: 3 ch (3C) [W]
Anarchism & Socialism (O)

Examines the historical context surrounding the emergence and development of radical leftist movements since 1848.

HIST4986   The Revolutionary Experience II: 3 ch (3C) [W]
Student Movements from the French Revolution to the Present

A comparative approach to student movement in Europe, the Americas, Africa, and Asia.

HIST5000   Honours Thesis   6 ch [W]

Prerequisites: Honours admission.

HIST5905   History: Theory and Practice   3 ch (3S) [W]

Introduces historical methodology, the process of historical research, and the influences on selected major historical studies. *Prerequisites:* Honours admission.

HIST5906   Honours Seminar   3 ch (3CS) [W]

Selected topics for Honours History students. *Prerequisites:* Honours admission.

HOSPITALITY AND TOURISM

Not all courses listed in this section will be offered each year. The official timetable must be consulted for courses offered each year.
NOTES:
In order to take a Hospitality and Tourism (HTM) course that has a prerequisite, students must earn a C or better in the prerequisite course(s), regardless of the program in which the student is registered. Students who feel they have the equivalent prerequisite background through a combination of coursework and work experience, may apply to the Faculty of Business on a Permission and Request Form for permission to enter a course. These forms are available from the Faculty of Business office in Oland Hall.
Students enrolled in HTM courses who do not have the stated *Prerequisites*, and who have not been given the permission of the Faculty of Business to remain in the course, will be administratively withdrawn from the course AFTER the last day to add courses each term.

HTM1103   Introduction to Tourism   3 ch

This course is designed to acquaint students with the broad topic of tourism. Emphasis is placed on the socio-cultural, environmental and economic impacts of tourism. In addition, the course focuses on the interdisciplinary nature of tourism, with pertinent elements drawn from business, economics, sociology, psychology, recreation and geography.

HTM2103   International Tourism   3 ch (3C)

This course studies the special characteristics of international tourism. Topics may include: the nature, importance and measurement of international travel, the impact of host/visitor interactions, factors affecting the motivation of travelers, and the constraints on travelers. *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM2217 Management Accounting for the Hospitality Industries 3 ch (3C)

This course examines the use of accounting information for planning and control in hospitality and tourism operations. Topics to be covered include cost-volume-profit analysis, budget planning and control, ABC costing, and performance evaluation all geared to the industry. Also included will be an introduction to measuring the costs of quality and to yield management. **NOTE**: Credit will not be granted for both HTM 2217 and BA2217. *Prerequisite:* BA1216 or admission to year three of the BAMHT.

HTM2903   Work Term Report I   1 ch

Identifies an opportunity or problem in the workplace, analyzes its sources and development, addresses key issues to be considered, offers alternatives and makes recommendations, including clear provisions for implementation.

HTM3505   Resort and Recreation Management   3 ch (3C)

This course considers concepts and methods of resort planning, management and marketing, including recreational and event management for the resort environment. Case studies of real and proposed resorts from different environments will be used. Field visits to one or more resorts will be an essential part of the course. *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM3506   Festivals and Events Management (A)   3 ch

The goal of this course will be to familiarize the student with this exciting and dynamic segment of the tourism and recreation industry. It will examine specific aspects of contemporary sport, community and cultural events; and the meeting, incentive, convention (MICE) industry. Topics to be studied include the main functions of Events Managers in the areas of development, planning, programming, marketing and promotions, facility management, human resources and finance. Students will be presented with case studies and applied projects *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM3555   Adventure And Leisure Tourism   3 ch (3C)

This course will explore issues related to entrepreneurial small business development in the growing adventure and leisure sector of the Tourism Industry. Participants will have the opportunity to research emerging trends and issues related to the feasibility of creating service products to serve this market. Small business models which allow for the creation of stable enterprises in an often seasonal market will be examined. *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM3903   Work Term Report II   1 ch

Identifies an opportunity or problem in the workplace, analyzes its sources and development, addresses key issues to be considered, offers alternatives and makes recommendations, including clear provisions for implementation.

HTM4101   Competitive Strategy   3 ch (3C)

This is an integrative course dealing with the many interdepartmental and interdisciplinary problems confronting the management team in addressing organizations with opportunities and problems. Extensive use will be made of case studies and on-site assignments or projects. Emphasis will be placed on productivity and the delivery of a quality product within a competitive environment. **NOTE**: credit will not be granted for both HTM 4101 and BA 4101. *Prerequisite:* Credit in all courses required for the BAMHT except HTM 4161.

HTM4111   Travel Writing and Photography   3 ch (3C)

Provides an introduction to the travel writing industry. Topics include the responsibilities and ethics of the travel writing profession and an examination of how visual imagery relates to tourism marketing, motivation, service quality and visitor satisfaction. *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM4161   Planning & Development of Sustainable Tourism   3 ch (3C)

This course examines the nature and scope of tourism planning and development from the perspective of markets, attractions, services, transportation suppliers, natural resources and government policy makers. Emphasis will be placed on community and regional tourism planning, with attention paid to economic, physical, environmental and social considerations of planning for tourism entities and destinations.

Prerequisite: Open to fourth year students who have successfully completed BA 3129, or permission of the Faculty.

HTM4503   Independent Study - Hospitality and Tourism   3 ch

This course will provide the student with a deepening knowledge in the Hospitality and Tourism area. Under the supervision of a Faculty member, the student will explore topics not available in the regular course offerings. The course may consist of written assignments, oral examinations and written examinations. Students must identify a faculty member who is willing to supervise the course and apply to the Director, Undergraduate Studies for approval at least 30 days prior to the term in which they wish to undertake the work. Applications are normally approved for students who are in their senior year and who have obtained a grade point average of at least 3.0 in the work of the second and third years.

HTM4516   Natural Area Tourism   3 ch

This course will examine in detail the management of tourism in natural areas. Topics will include an introduction to ecology, and how ecological and related sustainable management principles are used to manage visitors to natural parks and equivalent reserves. Students interested in outdoor recreation, adventure tourism, park and heritage management and related topics would find this course an advantage. *Prerequisite:* Students should have successfully completed HTM 1103 or permission of the Faculty. This is a Web-based course and a good understanding of MS Word and Excel as well as the Internet would be an advantage.

HTM4531   Historical Perspectives in Tourism   3 ch (3C)

An overview of the history of tourism in Canada with particular emphasis on the Province of New Brunswick. The course is designed to trace the evolution and role of tourism in Canada from the late nineteenth century to the present. The course will include explorations of selected leisure/tourism sites in the Saint John area. *Prerequisite:* HTM1103 or permission of the Faculty of Business.

HTM4545   Special Topics in Hospitality Management/   3 ch (3C) Tourism and Travel

This course surveys various issues and events that influence the hospitality and tourism industries. Topics will vary from year to year reflecting contemporary issues and events.

HTM4555   Sacred Sites Tourism (A)   3 ch

This course examines the characteristics and management of one of the largest tourism sectors, spiritual tourism, pilgrimages and sacred sites. Topics include the power of myth and belief in the identification of natural sacred spaces, and the creation of man-made religious and secular sacred spaces worldwide. The importance and measurement of international travel related to religious holidays, pilgrimages, and historic/heritage travel to places with significance to various cultural and religious groups will be discussed. The impact of host/visitor interactions and factors affecting motivation of travelers as well as constraints on travelers will be studied. The course will also include on-site visits to local sacred sites. *Prerequisite*: HTM 1103 or permission of the Faculty of Business.

HTM4565   Heritage Tourism   3 ch (3C)

This course explores the nature of heritage tourism. It surveys the issues that influence the development of heritage for tourism. Perspectives on heritage provisions for tourism will be examined in the context of social, cultural, tourism policies at the provincial, national, and international levels. *Prerequisite:* HTM 1103 or permission of the Faculty of Business.

HTM4903   Work term Report III   1 ch

Identifies an opportunity or problem in the workplace, analyzes its sources and development, addresses key issues to be considered, offers alternatives and makes recommendations, including clear provisions for implementation.

HUMANITIES

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

HUM1021   Effective Writing I   3 ch (3C) [W]

Examines various aspects of effective writing in English including vocabulary, sentence structure, organization of material, and essays of a descriptive, comparative, expository, critical and argumentative nature. Includes numerous written exercises. **NOTE**: Students may not receive credit for both HUM 1021 and HUM 2121.

HUM1401   Introduction to Music   3 ch [W]

An introduction to the development of music from the origins of musical performance and compositions to the relationships of music with present computer technology, and to the appreciation of music.

HUM1905   Introduction to Art   3 ch (3C/S)

An introduction to visual art based on thematic, historical or regional approaches. **NOTE**: Students who have taken HUM 1903 or HUM 1904 will not be given credit for this course.

HUM2003   Theory and Practice of Technical and   3 ch (3C) Professional Communication I (O)

A broad-based introduction to theories of workplace communication. Introduces the practice of workplace and other professional communication including technical writing, editing, proof-reading, document design, online publishing. *Prerequisite:* HUM 1021.

HUM2021   Effective Writing II (A)   3 ch (3C) [W]

This course develops academic skills in writing and research, and focuses on how critical analysis is used across the disciplines. Students will be introduced to methods of appraising and critiquing academic materials, developing skills in supporting a scholarly argument, and understanding ethical issues in research and writing. *Prerequisite:* HUM 1021. **NOTE**: Students may not receive credit for both HUM 2021 and HUM 3121.

HUM2501   Music in the Romantic Era   3 ch

A survey of musical development in nineteenth century Europe focusing on the major composers of the era such as Beethoven, Chopin, Brahms, Tchaikovsky and Wagner. *Prerequisite:* None.

HUM3003   Theory and Practice of Technical and   3 ch (3C) Professional Communication II (O)

Develops students' understanding of current theory and research in workplace communication, and gives them the opportunity to pursue workplace and other professional communication (including technical writing, editing, proofreading, document design, online publishing) in more depth. *Prerequisite:* HUM 2003.

HUM3205   Baroque and Rococo Art   3 ch [W]

A study of the history of Art and Architecture in Europe during the 17th and 18th centuries. *Prerequisites:* HUM 1903, HUM 1904.

HUM3208   Renaissance Art   3 ch [W]

Examines developments in painting, sculpture and architecture during the fifteenth and sixteenth centuries in Italy and in the rest of Europe. *Prerequisites:* HUM 1903, HUM 1904.

HUM3924   History of Modern Art   3 ch (3C) [W]

A study of major movements in the art of the 19th and early 20th centuries from Neo-classicism to Surrealism.

HUM3953   American Painting   3 ch (3C) [W]

A history of painting in the United States from the time of the Revolution to the 1960's, including Abstract Expressionism and Pop Art.

HUM3964   Canadian Painting   3 ch (3C) [W]

A history of Canadian Painting, emphasizing developments in the twentieth century.

HUM3966   Art of Photography (O)   3 ch (3C)

The course explores how photography developed in various historical, economic, political, and cultural settings worldwide and discusses the many uses to which photography has been put from art to vernacular, documentary to photojournalism, and science to advertising. It examines today's use of digital photography and how digital process and its capacity for manipulation has changed current notions of what photography is as well as what photography represents.

INFORMATION TECHNOLOGY

IT1703   Introduction to Computing Concepts   3 ch (3C)

An introduction to the essential concepts of computers, computing systems and computer-based information systems. Topics also include microcomputer operating systems and current office software. This course may not be taken for credit by BBA, CS, BISc, Engineering, and Science (except BSc in Economics) students. Credit will not be given for both IT 1803 and IT 1703.

IT1713   Multimedia and the Information Technology   3 ch (3C)

Introduction to multimedia concepts and technical underpinning of digital multimedia (including vector vs bitmap graphics, color, and animation). The current practices in web page design and construction using HTML (including advanced concepts such as CSS, image maps, etc.). Various software packages are introduced including PowerPoint for creating slide shows. **NOTE**: This course may not be taken for credit by Computer Science and Information Science students.

IT1803 **Introduction to Computers and Systems** **3 ch (3C)**

An introduction to the essential features of computers, computing systems and computer-based information systems. Includes: microcomputer operating systems, word processing and spreadsheets. This course is intended for students in Business, Education and Physical Education and cannot be taken for credit by CS, BISc, Engineering, or Science (except BSc in Economics) students. **NOTE**: credit will be given for only one of IT 1803, IT 1813, or IT 1703.

IT1813 **Introduction to Data Management** **3 ch (3C)**

This course covers the storage, manipulation, and presentation of data. Examples are drawn from various domains, such as sales, business-related, and scientific data. Two software packages are presented for such propose: MS Excel (concepts including formula, data consolidation, and graphical representation) and MS Access (concepts including table design for data storage, queries in both QBE and SQL format, forms, and report generation). Emphasis is placed on the strengths of each tool, and how to benefit from both by importing data from one tool into the other. Macro programming is introduced, so as to create simple applications within these tools. **NOTE**: This course may not be taken for credit by Computer Science and Information Sciences students. Credit will not be given for both IT 1803 and IT 1813.

IT2773 **Java Programming for the Internet** **3 ch (3C)**

The course will cover algorithm design and programming techniques using current software for web programming. Students are expected to have basic web page development skills. *Prerequisite:* IT 1713 or permission of instructor. **NOTE**: This course cannot be taken for credit by CS students. Also, credit will be granted for only one of the following courses: CS 1073, CS 1616, or IT 2773.

LATIN

LAT1001 **Introductory Latin I** **3 ch**

A beginner's course in Latin. No previous knowledge of Latin is required.

LAT1002 **Introductory Latin II** **3 ch**

A continuation of LAT 1001.

LAT2001 **Intermediate Latin I** **3 ch**

Emphasis on developing fluency in reading Latin. By the end of the term students will be reading unaltered Latin texts.

LAT2002 **Intermediate Latin II** **3 ch**

Reading of selections from Caesar, Cicero, and Ovid.

LINGUISTICS

For Linguistics taught in French, see FR 3412, FR 3432, FR 3434, FR 3442, FR 3464 under the French section.

LING1102 **English Syntax (O)** **3 ch (3C)**

An introduction to traditional concepts in English syntax. Covers two areas: grammatical categories (noun, verb, adjective, adverb, etc.) and sentence structure (subjects, predicates, complements; main vs subordinate clauses). The course is a theoretical presentation of grammatical concepts.

LING2101 **Linguistics I** **3 ch**

Basic concepts of phonetics, phonology, morphology, language change and language variation.

LING2202 **Linguistics II** **3 ch**

Basic concepts of syntax, semantics, language acquisition and computer applications of language.

LING3111 **Language Acquisition** **3 ch (3C)**

Theories of first and/or second language acquisition with focus on the stages of language acquisition and parametric setting.

LING3113 **Phonetics and Phonology** **3 ch (3C)**

Articulatory phonetics and phonology with comparative application to English, French, and other languages. This course is the equivalent to LING 3411 (Phonetics & Phonemics) at UNB Fredericton.

LING3114 **Syntax** **3 ch (3C)**

The generative grammar approach to sentence structure. Comparative applications to English, French, and other languages.

LING3212 **The History of the English Language** **3 ch (3C)**

The methodology of historical linguistics and an overview of Indo-European languages form the background for the discussion of changes in English: changes in consonant and vowel systems, transition to a non-case system, setting of parameters in syntax.

LING3223 **Semantics** **3 ch (3C)**

Meaning through language: word and sentence meaning, context, inference, speech acts. Comparative applications to English and French.

LING3224 **Cognition and Language** **3 ch (3C)**

Language as a cognitive system; focus on the work of Steven Pinker.

MATHEMATICS

MATH1001 **Calculus for Life Sciences** **3 ch (4C)**

Functions, limits, continuity, the concept of derivative, basic rules of differentiation. Derivatives of polynomials, exponential, logarithmic and trigonometric functions. Extreme values and related rates. Introduction to integration, area, volume, average value. Applications to life sciences will be stressed throughout the course. This course is restricted to students in Health Sciences, Nursing, and Biological Sciences. **NOTES**: (1) Credit will be given for only one of MATH 1001, MATH 1003, MATH 1823 or MATH 2853 (2) A minimum grade of B is required in MATH 1001 to take MATH 1013. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-calculus A 120 and Pre-calculus B 120, or equivalent.

MATH1003 **Introduction to Calculus I** **3 ch (4C)**

Functions and graphs, limits, derivatives of polynomial, log, exponential and trigonometric functions. Curve sketching and extrema of functions. *Prerequisites:* A grade of at least 60% in New Brunswick high school courses: Pre-calculus A 120 and Pre-calculus B 120, or equivalent. **NOTE**: Credit will be given for only one of MATH 1001, MATH 1003, MATH 1823 or MATH 2853.

MATH1013 **Introduction to Calculus II** **3 ch (4C)**

Definition of the integral, fundamental theorem of calculus, techniques of integration, improper integrals. Ordinary differential equations. Taylor polynomials and series. *Prerequisite:* A grade of C or higher in MATH 1003 or a grade of B or higher in MATH 1001.

MATH1503 **Introduction to Linear Algebra** **3 ch (3C)**

Lines and Planes, The Geometry and Algebra of vectors, Systems of linear equations, Matrix algebra, Linear independence, Linear transformations, Determinants, Complex numbers, Eigenvalues, Eigenvectors, Diagonalization, Rotation matrices. **NOTE**: Credit will not be given for both MATH 1503 and MATH 2213. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-calculus A 120 and Pre-calculus B 120, or equivalent.

MATH1853 **Mathematics for Business I** **3 ch (3C)**

This course will cover mathematical concepts of particular interest to Business students. Topics include elements of set theory and basic counting principles, a review of elementary functions, logarithmic and exponential functions, linear systems, matrices, systems of linear inequalities, arithmetic and geometric sequences, simple and compound interest, annuities, sinking funds and amortization. Applications to Business and Economics will be emphasized throughout the course. **NOTE**: Credit will not be given for both MATH 1833 and MATH 1853. It carries no credit for certain programs. Please consult with a faculty advisor. *Prerequisites*: A minimum grade of 70% in NB Foundations of Mathematics 120 or a minimum of 60% in NB Pre-Calculus 120A and 120B.

MATH1863 **Precalculus Mathematics** **3 ch (4C)**

A review of high school mathematics topics, particularly those covered in the New Brunswick high school curriculum. Topics include: elementary set theory, manipulation of algebraic expressions, equation and inequalities, analytic geometry, linear and quadratic functions, polynomial and rational function, exponential and logarithm functions, trigonometric functions, inverse trigonometric functions, analytic trigonometry. **NOTE**: This course is designed to serve as preparation for MATH 1001, MATH 1003, and MATH 1853. It carries no credit for certain programs. Please consult with a faculty advisor. MATH 1863 and MATH 0863 are not the same course.

MATH2003 **Intermediate Mathematics I (O)** **3 ch (3C 1T)**

Analytic geometry and vectors. Parametric curves. Polar, cylindrical and spherical coordinates. Functions of several variables, partial derivatives, applications to max-min. Double and triple integrals. **NOTE**: Credit will be given for courses in only one of the sequences MATH 2003/MATH 2013 or MATH 2523/MATH 2513. *Prerequisite:* MATH1013.

MATH2013 **Intermediate Mathematics II** **3 ch (3C 1T)**

Review of first order differential equations. Second order linear O.D.E.s. Infinite series including power series, solutions to O.D.E.s. Line and surface integrals. Theorems of Green and Stokes. Divergence theorem. See note following MATH 2003. *Prerequisite:* MATH 2003.

MATH2203 **Discrete Mathematics (A)** **3 ch (3C)**

Logic, methods of proof, mathematical induction, elementary set theory, functions and relations. This course is designed for students desiring a good grounding in the foundations of mathematics. Theorems and proofs are an important part of the course. **NOTE**: Credit will not be given for both MATH 2203 and CS 1303. It is recommended that students majoring in Mathematics or Statistics choose MATH 2203. *Co-requisites*: MATH 1013 and MATH 1503.

MATH2213 **Linear Algebra I** **3 ch (3C)**

This course introduces the basic concepts of linear algebra, mainly in finite dimensional real vector spaces. Systems of linear equations, vector and matrix algebra, bases and dimensions of subspaces, row and column spaces, linear transformations and matrix representations, inner products, determinants, eigenvectors and diagonalization. Applications as time permits. Credit will not be given for both MATH 2213 and MATH 1503. *Prerequisite:* MATH 1013 or equivalent.

MATH2513 **Multivariable Calculus for Engineers** **4 ch (4C)**

Functions of several variables, partial derivatives, multiple integrals, vector functions, Green's and Stokes' Theorems. See the note following MATH 2003. *Prerequisites:* A grade of C or higher in MATH 1013; and MATH 1503 or MATH 2213.

MATH2523 **Differential Equations and Series (A)** **3 ch (4C)**

First order differential equations, higher order linear differential equations, infinite series, power series, series solution of differential equations about ordinary points and singular points, Gamma and Beta functions, Bessel function and Legendre polynomials. *Prerequisite:* A grade of C or higher in MATH 1013.

MATH2633 **Fundamental Principles of Elementary (A)** **3 ch (3C)**
 School Mathematics

This course is primarily intended for individuals interested in elementary and middle school teaching, and is open to students registered in concurrent BEd program. This course may be taken by others with the approval of the student's department Chair or Dean. The focus is on the mathematical content of K-8 Atlantic Canada Mathematics Curriculum, and extensions beyond the classroom to show the how and the why behind school mathematics. Topics include problem solving, number concepts, number and relationship operations, patterns and relations, shape and space, as well as data management and probability. With the exception of the Certificate in Mathematics for Education, this course is not normally available for credit to students who would have at least 3 ch of Level 1000 mathematics in their degree programs. *Prerequisites:* Successful completion of at least one year of a university program.

MATH2853 **Mathematics for Business II** **3 ch (3C)**

Topics include limits, derivatives, marginal analysis, elasticity, single variable optimization, anti-derivative, definite integrals and applications, techniques of integration, simple differential equations, and difference equations. Functions of several variables and partial derivatives will be covered if time permits. Applications to Business and Economics will be emphasized throughout the course. **NOTE**: Credit will be given for only one of MATH 1001, MATH 1003, MATH 1823 or MATH 2853. *Prerequisite:* MATH 1853.

MATH3073 **Partial Differential Equations (A)** **3 ch (3C)**

Methods of solution for first order equations. Classification of second order equations. Characteristics. Analytic and numerical methods of solution for hyperbolic, elliptic and parabolic equations. *Prerequisite:* MATH 2013; or both MATH 2513 and MATH 3503, or equivalent.

MATH3093 **Elementary Number Theory (A)** **3 ch (3C)**

Primes, unique factorization, congruences, Diophantine equations, basic number theoretic functions. As well as serving mathematics majors, this course will be of particular benefit to prospective mathematics teachers. *Prerequisite:* At least 6 credit hours in Math excluding MATH 1863.

MATH3213 **Linear Algebra II (A)** **3 ch (3C)**

Vector spaces and subspaces, independent and spanning sets, dimension, linear operators, determinants, inner product spaces, canonical forms. *Prerequisite:* MATH 1503 or MATH 2213, or consent or instructor.

MATH3243 **Complex Analysis (A)** **3 ch (3C)**

Complex analytic functions, contour integrals and Cauchy's Theorem; Taylor's, Laurent's series and Liouville's Theorem; residue calculus. *Prerequisites:* MATH 2003 and MATH 2013, or MATH 2513 and MATH 2523; or equivalent.

MATH3303 **Operations Research I** **3 ch (3C)**

Linear programming models, simplex method, duality theory, post-optimality analysis, network simplex method and special cases, introduction to interior point methods. Credit will not be granted for both MATH 3303 and BA 3623. *Prerequisite:* MATH 2213.

MATH3343 **Networks and Graphs (A)** **3 ch (3C)**

Graphs, Euler paths, tournaments, factors, spanning trees, applications; graph colourings, planar graphs; Menger's theorem, flows in networks, flow algorithms. *Prerequisites:* (MATH 2213 or MATH1503) and (MATH 2203 or CS 1303).

MATH3414 **Introduction to Numerical Methods (O)** **3 ch (3C)**

Error analysis, convergence and stability. Approximation of functions by polynomials. Numerical quadrature and differentiation. The solution of linear and nonlinear equations and the solution of ordinary differential equations. This course will emphasize the understanding of numerical algorithms and stress applications in the applied sciences, as well as the influence of finite precision and arithmetic on computational results. Credit will not be given for both MATH 3414 (or MATH 3413) and CS 3113. *Prerequisites:* CS 1003 or CS 1073; and MATH 1013 or MATH 1053; and MATH 2213 or MATH 1503.

MATH3503 **Differential Equations for Engineers** **3 ch (4C)**

Nonhomogeneous differential equations, undetermined coefficients, variation of parameters, systems of 1st and 2nd order ordinary differential equations, Laplace transforms, Fourier series. *Prerequisite:* MATH 1503 or MATH 2213. *Co-requisite*: MATH 2513 or MATH 2003.

MATH3633 Fundamental Principles of School Mathematics (A) 3 ch (3C)

This course is primarily intended for individuals interested in school teaching. The focus is on the mathematical content of the K-12 Atlantic Canada Mathematics Curriculum with extensions beyond the classroom, to show the how and why behind school mathematics. Topics include mathematical language; real numbers and other mathematical structure; Euclidean geometry; functions; mathematical connections; problem solving. Intended for students registered in concurrent BEd programs, but may be taken for credit by others with the approval of the student's department Chair or Dean. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses Pre-calc 12A and Pre-calc 12B or equivalent, and successful completion of at least one year of a university program; or MATH 2633.

MATH3713 **Analysis I (A)** **3 ch (3C)**

A rigorous introduction to analysis on the real numbers. Sequences, limits, sets, functions, axioms for the real numbers, completeness, continuous and differentiable functions, the Mean Value Theorem. *Prerequisites:* MATH 1013 and (MATH 2203 or CS 1303.)

MATH3733 **Abstract Algebra (A)** **3 ch (3C)**

An introduction to the elementary theory of groups. Rings and Fields. Applications to number theory. *Prerequisites:* MATH 2203 and either MATH 1503 or MATH 2213.

MATH3753 **Applications of Mathematical Models (O)** **3 ch (3C)**

Provides an overview of mathematical modeling strategies for particular applications. Introduces students in a variety of disciplines to mathematical modeling based problem solving. General concepts such as stochastic vs. deterministic modeling are discussed and case studies of specific applications are presented. Case studies may include models of survival, models of cognition, models of population growth and financial models. Students develop case studies in the areas of their major or their own expertise. *Prerequisites:* One of STAT 4793, PSYC 3913, MATH 2013, MATH 2513, MATH 2523; or permission of the instructor.

MATH3901 **Financial Mathematics I** **3 ch (3C)**

Simple, compound, continuously compound interest, future value, series of payments, sinking funds, amortization, installments, Major assets type. Valuation of fixed-interst securities, effects of tax, ordinary shares, bonds. Deterministic models for term structure dynamics. *Prerequisite:* MATH 1003 or MATH 1853.

MATH3903 **Financial Mathematics II** **3 ch (3C)**

Options and option pricing, Black-Scholes formula, derivatives, forwards, futures, swaps, asset pricing, returns and payoffs, foreign currencies, put-call clarity, hedging, arbitrage, risk and immunization.

MATH4703 **Topics in Mathematics (O)** **3 ch (3C)**

Selected topics at an advanced level. Content varies from year to year. Topic of course will be entered on student's transcript. *Prerequisite:* Consent of instructor.

MATH4704 **Introduction to Coding Theory (O)** **3 ch (3C)**

Error-correcting codes are used to improve the reliability of information transmission. This course is an introduction to the mathematical theory of error correcting codes, covering algebraic and combinatorial methods used in designing good codes, and decoding algorithms. Topics selected from groups, rings, finite fields, vector spaces over finite fields, encoding and decoding of linear codes, bounds on the minimum distance, weight enumerators, perfect codes, Hamming codes, MDS codes, Golay codes, Reed-Muller codes, cyclic codes, and quadratic residue codes. *Prerequisites:* MATH 1503; and MATH 2203 or CS 1303 or consent of the instructor.

MATH4993   **Project in Mathematics**   3 ch [W]

Research project in the Mathematical Sciences carried out by the student under the supervision of a member of the Department. The student will submit a written report and make an oral presentation. *Prerequisite:* Normally 75% of total credits required in the program.

MECHANICAL ENGINEERING

A grade of C or higher is required in all Mechanical Engineering courses.

ME1312   **Computer Aided Design**   4 ch (3C 3L)

Introduces the technology of 3D parametric geometric modeling to design and model mechanical engineering parts, assemblies and devices. Geometric variables and their interrelationships will be covered by projects involving the design of mechanical components, assemblies and machines to meet functional requirements. Manufacturing requirements including Geometric Dimensioning and Tolerancing. The use of the model for analysis, optimization and simulation will be stressed. Presentation of the model through engineering drawings and pictorial renderings. Animation of mechanisms. A comprehensive commercial CAD program will be used. *Prerequisite:* ENGG1003.

ME2111   **Mechanics of Materials I**   3 ch (3C 1T)

Basic concepts, uniaxial stress and strain, Hooke's law, torsion, pure bending, bending design, shear flow, transverse loads, stress and strain transformation, Mohr's circle, strain measurement. *Prerequisite:* APSC 1023.

ME2122   **Mechanics of Materials II**   3 ch (3C 2T*)

Fatigue, yield criteria, thin-wall pressure vessels, strength and deflection of beams, buckling of columns, instability, indeterminate beams, energy methods, Castigliano's theorem. *Prerequisite:* ME 2111 or ME 2121 or CE 2023.

ME2125   **Mechanics of Materials Design Project**   1 ch (2L*) [W]

Analysis of the strength of a mechanical device. Shapes and materials will be modified to meet deflection and stress limits. Written reports will document choices made and assessment of design. Group oral reports. *Prerequisites:* ME 2111 or ME 2121 or CE 2023. *Co-requisites:* ME 2122.

ME2143   **Kinematics and Dynamics of Machines**   3 ch (3C 2T*)

Fundamental concepts of linkages, displacement, velocity and acceleration analysis using graphical and analytical methods. Static and dynamic force analysis of linkages. Design of cams, gears, and gear trains including ordinary and planetary gear trains. Balancing rotating masses. Simple gyroscopic effects. *Prerequisite:* APSC 1023 or ME 2003. *Recommended:* CMPE 1003 or CS 1003 or other introductory programming course.

ME2145   **Kinematics and Dynamics Design Projects**   1 ch (2L*) [W]

Student groups to design and build working model of planar linkage mechanism, based on a mechanical application. Cooperation and project management skills. Written reports to document choices made; evaluation of working model performance; and position, velocity, acceleration and force analyses. Group oral reports. *Prerequisite:* APSC 1023 or ME 2003. *Co-requisite:* ME 2143.

ME2352   **Design Optimization**   4 ch (3C 3L)

Optimization of any design is essential either to remain competitive or to improve product efficiency and quality. Several optimization methods are presented through a variety of mechanical design and industrial engineering problems. Topics include: single and multi-variable unconstrained optimization, linear programming, transportation, assignment and network problems. Other topics such as constrained and global optimization are introduced. *Prerequisites:* CMPE 1003 or CS 1003, MATH 2513. *Recommended Co-requisite:* ME2143.

ME2413   **Thermodynamics**   3 ch (3C 1T)

Properties of a pure substance - work and heat. First law and applications in non-flow and flow processes. Second law and reversibility; entropy, applications of the second law to non-flow and flow processes. Analysis of thermodynamic cycles. Otto and Diesel cycles. Thermodynamic relationships. *Prerequisites:* CHEM 1872 and MATH 1013. *Co-requisite:* MATH 2513.

ME2415   **Thermodynamics I Laboratory**   1 ch (3L*) [W]

Laboratory experiments and measurements related to Thermodynamics I. Laboratory reports and readings are assigned. *Co-requisites:* ME 2413

ME3232   **Engineering Economics**   3 ch (3C)

Application of engineering economic analysis to mechanical and industrial engineering systems. Major emphasis will be given to decision-making based on the comparison of worth of alternative courses of action with respect to their costs. Topics include: discounted cash flow mechanics, economic analyses, management of money, economic decisions. Restricted to students with at least 60 ch in their program.

ME3513   **Fluid Mechanics**   3 ch (3C 1T)

The principles of fluid mechanics are introduced and methods are presented for the analysis of fluid motion in practical engineering problems. Specific topics include: fluid statics; integral balances of mass, momentum, angular momentum and energy; boundary layer theory and introduction to the Navier-Stokes equations; dimensional analysis; and liquid flow in piping networks with pumps and turbines. Pressure and flow measurement and experimental uncertainty. *Prerequisite:* APSC 1023. *Co-requisite:* MATH 2513

ME3515   **Fluid Mechanics I Laboratory**   1 ch (3L*) [W]

Laboratory experiments and measurements related to Fluid Mechanics I. Laboratory reports and readings are assigned. *Co-requisite:* ME3513.

NURSING

NURS1011   **Nursing as a Profession**   3 ch (3C)

Introduction to the foundations, heritage and practices of nursing as a profession. Examines UNB nursing curriculum and philosophy.

NURS1020   **Interprofessional Health Mentor Experience**   1 ch (1C)

Introduction to Interprofessional education and practice delivered through an innovative learning opportunity through partnerships with Dalhousie Medicine and NBCC. Students will have opportunities to develop interprofessionol communication skills and understandings of interprofessional patient/client-centered care through learning about chronic conditions and/or disabilities and their management from the perspective of persons living with conditions/disabilities. *Co-requisites:* NURS 1011, NURS 1032 For BN students only.

NURS1032   **Professional Relationships**   3 ch (3C)

Introduction to the theoretical foundation of professional relationships in nursing with a focus on self awareness, communication and caring. *Co-requisite:* NURS 1011.

NURS1041   **Health Assessment**   4 ch (3C 1L)

Addresses physical, psychosocial and cultural assessment throughout the lifespan. With an emphasis on adults. The nurse's role in health promotion is explored. Includes a lab component. *Prerequisites:* NURS 1032, NURS 1011. *Co-requisites:* NURS 1235, NURS 1225, and BIOL 1442.

NURS1225   **Nursing and Wellness**   3 ch (3C)

Explores the concepts of wellness, health and illness within the framework of primary health care. *Prerequisites:* NURS 1011, NURS 1032. *Co-requisite:* NURS 1235.

NURS1235   **Clinical Practice: Nursing and Wellness**   3 ch (9L)

Within various clinical settings, explores the concepts of wellness, health, and illness within the framework of primary health care. *Prerequisites:* NURS 1032, NURS 1011. *Co-requisites:* NURS 1225, NURS 1041.

NURS 1323   **Indigenous Perspectives on Health**   3 ch (3C)
                    and Wellness

The focus of this course is to build an understanding of Indigenous health, community wellness and cultural safety to promote equitable health care practice and policy. In the course, students will examine Indigenous models of health and healing, storytelling, and tools for allyship.

NURS2011   **Concepts for Professional Nursing Practice**   3 ch (3C)

Includes core concepts (health, client, environment, nursing), nursing standards, professional issues (ethics, legal, collaboration) and primary health care with particular emphasis on health promotion and disease prevention. This course is intended for LPN Bridge students only.

NURS2051   **Clinical Decision Making**   3 ch (3C)

Combines concepts essential for a comprehensive health assessment, safe delivery of medications in a complex care environment. Using a primary health care framework, the course will enhance clinical judgement, interpretation of clinical findings, and appropriate nursing actions that result from both. This course is intended for LPN Bridge students only.

NURS2063 Concentrated Clinical Practice I 4 ch

An integrative practice experience with young families and/or individual client and their families living with chronic health challenges. *Prerequisites:* All year 2 nursing courses and BIOL 2831 and BIOL 2852.

NURS2132 Pharmacology 3 ch (3C)

Includes theory and principles of pharmacology relevant to nursing. Provides knowledge to administer medications, provide client education and assess potential for adverse events related to medication and lifestyle issues. Theory will include basic legal and safety issues related to drug administration by the nurse. *Prerequisites:* All Year 1 Nursing courses. *Co-requisites:* NURS 2135, NURS 2177, and BIOL 2831.

NURS2135 Chronic Health Challenges 3 ch (3C)

Focuses on the impact and influences of long-term health challenges on individual clients and their families. Examines rehabilitative and supportive nursing practice. *Prerequisites:* All Year 1 Nursing courses. *Co-requisites:* NURS 2157, BIOL 2831.

NURS2145 Mental Health Challenges 3 ch (3C)

Explores the experiences of persons living with mental illnesses and examines related nursing therapeutics. *Prerequisites:* NURS 2135, NURS 2157, BIOL 2831. *Co-requisite:* NURS 2189.

NURS2157 Clinical Practicum I 3 ch (12L)

In various clinical settings, students will be provided opportunities to assess, plan, implement and evaluate care while supporting individual clients and their families living with chronic health challenges. *Prerequisites:* All Year 1 Nursing courses. *Co-requisites:* NURS 2135, BIOL 2831.

NURS2177 Young Families' Health 3 ch (3C)

Focuses on promoting the health of childbearing and child-rearing families. Encompasses the childbearing experience. *Prerequisites:* All Year 1 Nursing courses. *Co-requisite:* NURS 2135 and BIOL 2831.

NURS2189 Clinical Practicum II 4 ch

Provides students with the opportunity to apply theory and acquire skills in practice environments with a focus on young families and mental health challenges. *Prerequisites:* NURS 2157, NURS 2177 and NURS 2135. *Co-requisites:* NURS 2145.

NURS3061 Issues in the Canadian Health Care System 3 ch (3C)
(Cross-Listed: HSCI 3061)

This course focuses on the history and organization of the Health Care System and discusses current health care issues. *Prerequisites:* NURS 2063 for BN students, all required LPN Bridge Courses for BN/LPN. *Co-requisites:* NURS 3092.

NURS3064 Community and Population Health Nursing 3 ch (3C)

Focuses on community assessment and program planning in institutional and non-institutional settings. Students assess primary health care needs of a community, and are involved with planning, implementing, and evaluating health care programs for target groups. *Prerequisites:* NURS 2063 for BN students, all required LPN Bridge courses for BN/LPN students and *Co-requisites:* NURS 3067 and NURS 3092.

NURS3067 Clinical Practicum: Community and Population 4 ch
Health Nursing

Emphasis is placed on applying program development skills in community settings. *Prerequisites:* NURS 2063 for BN students, all required LPN Bridge courses for BN/LPN students. *Co-requisites:* NURS 3064 and NURS 3092.

NURS3071 Acute Health Challenges 3 ch (3C)

Examines the client's experience of acute health challenges, with a focus on nursing therapeutics. *Prerequisite:* All required nursing and non-nursing courses in fall-term of year 3. *Co-requisite:* NURS 3073.

NURS3073 Clinical Practice: Acute Health Challenges 5 ch (12L)

Complements and supplements NURS 3071.

NURS3081 Theoretical Foundations of Nursing 3 ch (3C)

Explores theoretical foundations of nursing practice and research, including critical analysis of theories and concepts related to nursing. *Prerequisite:* NURS 3092.

NURS3092 Nursing Research (Cross-Listed: HSCI 3092) 3 ch (3C)

Critically examines the purposes, processes, and utilization of research in health care. Explores the interaction between theory and evidence-based practice. **NOTE:** Credit will only be given to one of HSCI 3092 or NURS 3092. *Prerequisite:* STAT 2263 or approved substitute. Completion of all Year 2 courses in the BN or BHS program or equivalent.

NURS3709 Clinical Nutrition 3 ch (3C)

This course is designed to provide knowledge on nutritional principles and let their role in maintaining and restoring health. Completion of year 2 BN or the LPN bridge program required. *Prerequisites:* Successful completion of NURS 2063 or the LPN bridge.

NURS4142 Issues and Leadership in Healthcare 3 ch (3C)
(Cross-Listed: HSCI 4142)

Explores professional health care practice issues and trends. Examines organizational theory and leadership roles of healthcare professionals. Explores the foundations of professional development and practice.

NURS4152 Concentrated Clinical Practice III 12 ch

A preceptored clinical experience in which student learning is facilitated by a registered nurse preceptor in one nursing practice setting and a nursing program representative in a faculty liaison role. *Prerequisites:* All preceding required credts for the BN program.

NURS4211 Families with Multiple Challenges 2 ch (2C)

From the family perspective, explores the impact of long-term complex health challenges on the family. Examines the implications for nursing practice. *Prerequisites:* NURS 3703 for BN students. *Co-requisites:* NURS 4321, NURS 4322 for BN students.

NURS4234 Independent Study 3 ch

An elective independent study program under the guidance of a faculty member is pursued on the basis of student interest in any area of nursing. Faculty approval required.

NURS4321 Nursing in Complex Situations 3 ch (3C)

Explores clients' experiences of complex health challenges. Examines related nursing therapeutics with an emphasis on clinical judgment and decision making. *Prerequisite:* NURS 3703. *Co-requisite:* NURS 4322.

NURS4322 Clinical Practicum: Nursing in Complex Situations 5 ch (12L)

Provides students with the opportunity to care for families who have at least one member experiencing an acute or chronic illness. Students wll be expected to care for families in multiple settings, including their home and hospital. Students will integrate and apply the theory examined in NURS 4211 and NURS 4321 in this practice setting. *Prerequisite:* NURS 3703 for BN students. *Co-requisites:* NURS 4321 and NURS 4211.

PHILOSOPHY

PHIL1001 Introduction to Philosophy I 3 ch (3C)

A survey of Western Philosophy from Thales of Miletus to Thomas Aquinas.

PHIL1002 Introduction to Philosophy II 3 ch (3C)

Survey of Western Philosophy from Francis Bacon to Contemporary Philosophy. *Prerequisite:* PHIL 1001.

PHIL1053 Introduction to Logic, Reasoning and Critical Thinking 3 ch (3C)

An introduction to informal logic - the logic of ordinary language. Topics covered include inductive, deductive, moral and ethical arguments and fallacies in reasoning. Special emphasis is given to showing the importance of logic and critical reasoning as it relates to our personal and professional lives, the public forum of business, politics and ethical debates, and popular culture and media.

PHIL2003 Introduction to Moral, Social and 3 ch (3C) [W]
Political Philosophy

A historical investigation into such moral and socio-political concepts as goodness, virtue, happiness, justice, choice, duty, custom, natural and civil law, the state, freedom and the individual.

PHIL2034 Religion and Ethics 3 ch (3C) [W]

An examination of such notions as good and evil, compassion and social justice, divine and natural authority, community and society, from the perspectives of religious affirmation and moral reasoning.

PHIL3012 Symbolic Logic 3 ch (3C)

A study of the principles and practice of symbolic logic including truth tables, along with the standard notions and methods of natural deduction: conditional and indirect proof and indirect proof. This course emphasizes applications in sentence lofic and in the logic of qualalification up to the logic of relations. *Prerequisite:* PHIL 1053, or one upper level course in Mathematics, or permission of instructor.

PHIL3014 Metaphysics and Epistemology 3 ch (3C) [W]

A study of issues in the branches of philosophy concerning reality and knowledge: metaphysics (the overall framework of reality) and

epistemology (the theory of knowledge). *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3033 **Pre-Socrates and Plato** 3 ch (3C) [W]

An examination of early forms of Greek thought from the pre-Socratics and Plato. The Platonic tradition will also be surveyed and assessed. *Prerequisites:* PHIL 1001 or permission of the instructor.

PHIL3034 **Aristotle and Hellenistic Philosophies** 3 ch (3C) [W]

A study of Aristotelian thought and of the diverse philosophies of the Hellenistic period. *Prerequisite:* PHIL 1001 or permission of the instructor.

PHIL3063 **Philosophy of Language** 3 ch (3C)

A study of some of the basic concepts of argument and reasoning, such as truth and falsity, analyticity, validity, agreement, stating and questioning. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3075 **Philosophy of Art** 3 ch (3C) [W]

This course examines the principles and concepts of art, as developed by philosophers and artists themselves, from ancient aesthetic theory, through essays on taste, to more recent views of aesthetic perception and the function of art in society. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3085 **Philosophy & Film (O)** 3 ch (3C)

An exploration of the philosophical themes and issues in selected films. *Prerequisites:* One term-course in Philosophy or permission of the instructor.

PHIL3115 **Contemporary Continental Philosophy (O)** 3 ch (3C)

An in-depth study of the origins of and subsequent developments in Contemporary Continental Philosophy: the European philosophical tradition in western philosophy. *Prerequisite:* PHIL 1002 or permission of the instructor.

PHIL3116 **Contemporary Analytic Philosophy (O)** 3 ch (3C)

An in-depth study of the origins of and subsequent developments in Contemporary Analytic Philosophy: the Anglo-American philosophical tradition in western philosophy. *Prerequisite:* PHIL 1002 or permission of the instructor.

PHIL3117 **Contemporary Political Philosophy (O)** 3 ch (3C)

An exploration of the most influential approaches to contemporary political philosophy and the central issues that are addressed therein. Topics include: liberalism and communitarianism; justice, rights and freedoms; equality; private and public virtues; social responsibilities; citizenship and nationhood; and economic and environmental sustainability. *Prerequisites:* One term-course in Philosophy or Politics or permission of the instructor.

PHIL3124 **Contemporary Moral Problems** 3 ch (3C) [W]

A wide-ranging look at a variety of claims and issues perplexing moral agents in contemporary society. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3133 **Health Care in Ethics I** 3 ch (3C) [W]

Examines major problems in contemporary medical practice, including confidentiality, informed consent and paternalism, compulsory sterilization and blood transfusions, contraception, abortion and genetic engineering, euthanasia, allocation of scarce resources, moral aspects involved in strikes of medical personnel, and conflict of duty situations. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3134 **Health Care in Ethics II** 3 ch (3C) [W]

A continuation of Health Care Ethics I. Examines major problems in contemporary medical practice, including confidentiality, informed consent and paternalism, compulsory sterilization and blood transfusions, contraception, abortion and genetic engineering, euthanasia, allocation of scarce resources, moral aspects involved in strikes of medical personnel, and conflict of duty situations. *Prerequisite:* PHIL 3133.

PHIL3141 **Philosophy of Mind** 3 ch (3C) [W]

A study of various philosophical approaches to the nature and concept of mind. Topics to be covered include: Cartesian Dualism, Freudian Psychology, Behaviourism, Cognitive Psychology and Artificial Intelligence. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3153 **Business Ethics** 3 ch (3C) [W]

An evaluation of a selection of moral problems in business enterprises. Topics include: the state and business; the profit motive; ethics in the workplace; moral development; justice as fairness; social responsibility;

wage equity; bribery; discrimination in hiring; ecology; business and the developing world; advertising; sexual harassment. *Prerequisite:* One term- course in Philosophy or permission of the instructor.

PHIL3171 **Philosophy of Religion I** 3 ch (3C) [W]

A critical examination of the central philosophical issues in the Western Religious Tradition. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3172 **Philosophy of Religion II** 3 ch (3C) [W]

A further analysis and elaboration of issues raised in PHIL 3171. *Prerequisite:* PHIL 3171 or permission of the instructor.

PHIL3181 **Philosophy of History I** 3 ch (3C) [W]

A philosophical exploration of the nature of history and historiography. Topics include: laws and explanation; objectivity and subjectivity; point of view and value judgements; and narrative. *Prerequisites:* One term-course in Philosophy or permission of the instructor.

PHIL3241 **Philosophy of Natural Science** 3 ch (3C) [W]

An analysis of such scientific concepts as explanation, theory, and law, with special attention to the implications of recent scientific theories. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3242 **Philosophy of Human Science** 3 ch (3C) [W]

An analysis of the methods, theories and presuppositions of such human sciences as economics, psychology, history, and anthropology. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3252 **Environmental Philosophy** 3 ch

This course in environmental philosophy provides students with the basic concepts needed to analyze environmental issues from a philosophical point of view. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3531 **Late Antiquity & Early Medieval Philosophy (A)** 3 ch (3C)

This course will concentrate on major figures, persistent themes and significant philosophical works of late antiquity and early medieval philosophy, from the rise of Christianity to the Carolingian Renaissance. *Prerequisite:* One term-course in philosophy or permission of the instructor.

PHIL3532 **Medieval & Renaissance Philosophy** 3 ch (3C)

This course will concentrate on major figures, persistent themes and significant philosophical works of the medieval period, from the rise of scholasticism, through the full flowering of medieval philosophy in the 13th century, to the breakdown of the medieval synthesis and the rise of Renaissance thought. *Prerequisite:* PHIL 3531.

PHIL3631 **Phenomenology and Existentialism** 3 ch (3S)

A study of the phenomenological method and existential inquiries into human existence. Topics include: existence; freedom, angst; alienation; death; meaning and hope. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3841 **17th & 18th Century Modern Philosophy** 3 ch (3C) [W]

A study of the Rationalist and Empiricist traditions of the 17th and 18th century from Descartes to Hume. *Prerequisite:* PHIL 1002 or permission of the instructor.

PHIL3852 **Kant and 19th Century Philosophy** 3 ch (3C) [W]

A study of late 18th and 19th century German philosophy from Kant to Marx. *Prerequisite:* PHIL 1002 or permission of the instructor.

PHIL3901 **Special Topics I** 3 ch

This course will focus on specialized areas of interest. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3902 **Special Topics II** 3 ch

This course will focus on specialized areas of interest. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHYSICS

PHYS1011 **Introductory Physics I** 3 ch (3C 1T)

This course is an introduction to the branch of physics called mechanics. Mechanics is the study both of how objects move and why they move the way they do. Describing the motion of objects requires understanding the basic kinematics quantities position, displacement, velocity, and acceleration, as well as the connection between them. Understanding the causes of motion can be achieved by considering the forces acting on the

object and/or by focusing on the conserved properties of the system (momentum, energy, angular momentum). Mechanics applies to a wide range of phenomena, essentially to anything that moves, but this course will highlight ties to and applications in the physical sciences. *Co-requisites*: Either MATH 1001 or MATH 1003. Students intending to take Physics courses beyond Introductory Physics or continue in the Physical Sciences stream should take MATH 1003 and PHYS 1021 as *Co-requisites* to this course.

PHYS1012   Introductory Physics II   3 ch (3C 1T)

This course introduces the students to wave phenomena and to electricity and magnetism. Throughout, the concepts related to motion learned in the previous course are used to describe and explain new phenomena. The study of waves introduces the students to propagating, periodic disturbances. In addition to their importance in mechanical phenomena (e.g. seismic waves), waves form the basis of both optics and acoustics. The study of electricity and magnetism introduces the student to the concept of charge and to the effects of their surroundings (fields and forces). This course will highlight ties to and applications in the physical sciences. *Prerequisites:* PHYS 1011; MATH 1001 or MATH 1003. Students intending to take Physics courses beyond Introductory Physics or continue in the Physical Sciences stream should take MATH 1013 and PHYS 1022 as *Co-requisites* to this course.

PHYS1021   Experiments in Introductory Physics I   2 ch (3L)

This course provides the student hands-on experience with concepts covered in PHYS 1011. *Co-requisite*: PHYS 1011.

PHYS1022   Experiments in Introductory Physics II   2 ch (3L)

This course provides the student hands-on experience with concepts covered in PHYS 1012. *Co-requisite*: PHYS 1012.

PHYS1801 Introductory Physics for Biological Sciences 5 ch (3C 1T 3L E)

A general introduction to Physics, with applications to biological systems. Topics include mechanics, fluid mechanics, electromagnetism, optics, acoustics, and radiation phenomena. This course is intended primarily for students in Biological Sciences. **NOTE**: Credit will not be given for both PHYS1801; and PHYS 1011/PHYS1021. *Co-requisites*: MATH 1001 or MATH 1003.

PHYS1917   Physics for Engineering   5 ch (4C 2T/3L)

Vectors, kinematics, momentum, force, potential and kinetic energy. Kinetic theory of gases, circular motion, charge, field and potential, gravitation, electrostatics, optics, sound. *Prerequisite:* Grade 12 Physics or equivalent.

PHYS2011   Mechanics   5 ch (3C 3L)

Scalar and vector quantities, statics, kinematics, dynamics, work, energy, power, rotational motion, impulse and momentum, vibratory motion. *Prerequisites:* MATH 1013, PHYS 1011/PHYS 1012 and PHYS 1021/PHYS 1022.

PHYS2016   The Physics of Spaceflight   3 ch (3C)

Have you ever wondered how to get to Mars? If so, this course is for you. The course will begin with the famous problem of proving Kepler's three laws of planetary motion from Newton's 2nd law of motion and his Universal Law of Gravitation. From this launching point definitions will be developed for the significant geometrical and physical characteristics of elliptical, parabolic and hyperbolic orbits. Next, and what will form the bulk of the course, the motion of spacecraft, and how they can move from one orbit to another, will be studied. The basic form of orbital transfer, called the Hohmann transfer, will be applied first to spacecraft moving from orbit to orbit around the earth and, later, to flights to the Moon, Mars and beyond. *Prerequisites:* PHYS 1011 or APSC 1013 or PHYS 1801; MATH 1003/MATH 1013; or equivalents; or permission of Instructor.

POLITICS

POLS1201   Introduction to Canadian Politics   3 ch (3C/T) [W]

Survey course focusing on Canadian government and politics at the national level.

POLS1301   Global Political Studies   3 ch (3C) [W]

This course introduces students to the global issues of imperialism, globalization and democratization and their impacts on the governance of various countries. *Prerequisites:* None. Credit cannot be given for both POLS 1301 and IS 1001.

POLS2201   Issues in Canadian Politics   3 ch (3C) [W]

This course expands on ideas introduced in POLS 1201 with a focus on the relationship between Canadian political institutions and Canadian society. *Prerequisite:* POLS 1201 or permission of the instructor.

POLS2301   Politics of the Developing World   3 ch (3C) [W]

Overview of political issues facing developing countries.

**POLS2311   The History and Politics of Latin America   3 ch (3C) [W]
                (Cross-Listed: HIST 2511)**

Provides an overview of Latin American history and politics from colonization to the 20th century. *Prerequisite*: POLS 1301 or permission of the instructor.

POLS2401   Introduction to Political Ideas   3 ch (3C) [W]

An introduction to the ideas and principles that serve as the foundation for Political Science. *Prerequisite:* 1 term-course in Politics or permission of the instructor.

POLS2601   Introduction to International Politics   3 ch (3C/T) [W]

General introduction to the historic and contemporary practices of international relations.

POLS3101   Constitutional Politics in Canada   3 ch (3S/T) [W]

Examines the structure and process of constitution-making, and conflicting visions of constitutional change.

POLS3201   New Brunswick Politics   3 ch (3S/T) [W]

An overview of the history and development of New Brunswick politics.

POLS3205   Canadian Provincial Politics   3 ch (3C/S) [W]

Designed to provide the student with an overview of the nature of government and political processes in the Canadian provinces.

POLS3221   Canadian Political Issues I   3 ch (3C/S) [W]

Emphasis on current problem areas in Canadian Politics.

POLS3222   Canadian Political Issues II   3 ch (3C/S)

Emphasis on a selected problem area in Canadian Politics.

POLS3225   Gender and Canadian Politics   3 ch (3C) [W]

Examines the role of gender in Canadian social movements, political parties and political institutions, including Parliament, the courts and the media. *Prerequisite:* POLS 1201 or permission of the instructor.

**POLS3231   Representation and Recognition   3 ch (3C) [W]
                in Canadian Politics**

This course addresses the representation and recognition of women, aboriginals, Francophones, LGBT individuals, ethnic minorities and individuals with disabilities in the Canadian political system. *Prerequisite:* POLS 1201 or permission of the instructor.

POLS3241   Canadian Voting Behaviour   3 ch (3S/T) [W]

A study of the electoral system, representation, and voting behaviour in Canada.

POLS3252   Canadian Political Parties   3 ch (3S/T) [W]

Directed at a systematic study of the structure and functions of political parties in Canada.

POLS3255   Interest Groups and Social Movements   3 ch (3C) [W]

Explores the development, goals, strategies and political impact of interest groups and social movements.

POLS3261   Canadian Federalism   3 ch (3C/S) [W]

Advanced analysis of specific issues affecting the federation.

POLS3277   Political Leadership in Canada   3 ch (3S/T) [W]

Focuses on various aspects of political leadership at the federal level.

POLS3291   First Nations Government in Canada   3 ch (3C/S) [W]

Examines the politics and administration of the relationship between aboriginal peoples and the Canadian state.

POLS3292   Politics of Aboriginal Self-Government   3 ch (3C/S) [W]

A systematic analysis of the principles, structures and institutions of traditional and contemporary aboriginal self-government in Canada.

POLS3311   Government of the United States   3 ch (3C/L) [W]

An analysis of contemporary issues in American politics, derived from an understanding of the concepts and structures of the national governmental system.

POLS3325   Gender and Comparative Politics   3 ch (3C) [W]

Comparative study of gender issues in selected countries, including women's political organizations, political participation and social policies affecting women. *Prerequisite:* POLS 1301 or permission of the instructor.

POLS3334 **Latin American Politics** 3 ch (3C) [W]

This course discusses the major political trends, actors and processes that have shaped Latin American governments and politics throughout the course of the 20th and 21st Centuries. *Prerequisite:* POLS 1301 or POLS 2601 or permission of the instructor.

POLS3341 **Comparative Federalism** 3 ch (3C/S) [W]

A comparison of selected federal state structures. Definition of the problems and prospects of federation in Canada, the United States, Russia and other examples.

POLS3344 **Latin American Revolutions** 3 ch (3C) [W]
  (Cross-Listed: HIST 3591)

Examines the origins and course of Latin American Revolutions, especially the Mexican and Cuban revolutions. *Prerequisites:* POLS 1301 and POLS 2301 or POLS 2601 or permission of the instructor.

POLS3345 **Political Behaviour** 3 ch (3C) [W]

An examination of the foundations of political behaviour, public opinion, political participation and political elites.

POLS3355 **Politics of the Environment** 3 ch (3C/S) [W]

Focus on the public sensitivity to environmental/ecological issues, political responses to this phenomena, and consequences of those responses. Uses a case-study approach.

POLS3401 **Modern Political Thought** 3 ch (3C) [W]

Examines a selection of major texts from the modern period of Western political theory, encompassing classic statements of conservative, feminist, liberal, and socialist thought.

POLS3425 **Canadian Political Ideas** 3 ch (3S/T) [W]

This course surveys the tradition of Canadian political thought from Confederation to the present.

POLS3473 **Political Communications** 3 ch (3C) [W]

Examines the relationship between politics and the media including the media's role as critics and opposition to government & the coverage if provides during election campaigns. Designed as an upper level course for students majoring in politics or with a background in media or communications studies. *Prerequisite:* POLS 1201 or permission of the instructor.

POLS3494 **Democracy** 3 ch (S/T) [W]

Examines the concept, and the various theories, of democracy.

POLS3501 **Public Policy** 3 ch (3S/T) [W]

Examines the major approaches explaining and understanding Canadian public policy, and applies them to a study of major public policy fields. *Prerequisite:* POLS 1201 or permission of the instructor.

POLS3601 **Contemporary Issues in World Politics** 3 ch (3S) [W]

Deals with current trends on the international scene including the global balance of power, relations between superpowers, ideological conflicts, the developing world, war, revolution, etc.

POLS3603 **Critical Perspectives on International** 3 ch (S) [W]
  Relations Theory

A seminar that centers on frameworks for understanding international relations including: race, nationalism, political geography, de-territorialization, sovereignty, feminism, global communication, humanitarianism, human rights, the state and political space, forms of political conflict, identity theory, ethnography, and globalization.

POLS3625 **Gender and International Politics** 3 ch (3C) [W]

Introduction to the gender aspects of international relations including militarism, nationalism, international political economy, the environment and human rights. *Prerequisite:* POLS 2601 or permission of the instructor.

POLS3631 **Survey of Global Issues** 3 ch (3S/L) [W]

Current global issues such as war, militarism, the arms race, human rights and social justice, ecological imbalance, economic inequalities, and alternative world organizational structures, considered from international and interdisciplinary perspectives. General-interest course.

POLS3632 **Politics and the City** 3 ch (3C) [W]

This course explores the ways in which urban politics and planning have an effect on poverty and income disparities, and examines the role public and green spaces play in people's everyday lives. *Prerequisites:* POLS 1301 or POLS 2601 or permission of the instructor.

POLS3683 **Human Rights** 3 ch (3S/T) [W]

An examination of human rights in an international context, including international human rights instruments, and enforcement and the implications of economic, political and cultural globalization for human rights standards.

POLS3685 **The Politics of Food** 3 ch (3C) [W]

This course provides an overview of the political and policy issues concerning food production and consumption in Canada and around the World. *Prerequisite:* POLS 1301 or POLS 2601 or permission of the instructor.

POLS3901 **Approaches to Political Research** 3 ch [W]

A survey of the major approaches and techniques used to research and analyze politics. *Prerequisite:* POLS 2401 or permission of the instructor.

POLS4211 **Special Topics in Canadian Politics** 3 ch (3S/T) [W]

Advanced study of a specific subject in Canadian politics. Course topics will change annually.

POLS4214 **Prime Ministers and Cabinets** 3 ch (3C) [W]

An examination of Canadian prime ministers and federal cabinets with a focus on the centralization of power in the prime minister's office and historical developments in these Canadian political institutions. *Prerequisites:* POLS 1201 and at least one of POLS 3101, POLS 3205, POLS 3231, POLS 3241, POLS 3252, POLS 3261, or POLS 3278 or permission of the instructor.

POLS4226 **Directed Reading in Canadian Politics** 3 ch (3C) [W]

Open to students desiring further specialization, the course requires a research paper in Canadian politics, supervised by an instructor in the subject area.

POLS4311 **Special Topics in Comparative Politics** 3 ch (3S/T) [W]

Advanced study of a specific subject in comparative politics. Course topics change annually.

POLS4336 **Directed Reading in Comparative Politics** 3 ch [W]

Open to students desiring further specialization, the course requires a research paper in comparative politics, supervised by an instructor in the subject area.

POLS4411 **Special Topics in Political Theory** 3 ch (3S/T) [W]

Advanced study of a specific subject in political theory. Course topics change annually.

POLS4416 **Directed Reading in Political Theory** 3 ch [W]

The course is open to 4th-year students with a sufficient background and a special interest in political theory. It can be taken only with permission of the relevant instructor.

POLS4501 **Politics Practicum** 3 ch (LE)

Independent study course that provides students with volunteer experience working in a politics related organization. It can only be taken with supervision by an instructor in the subject area. Available to Politics Majors.

POLS4505 **Politics, Policy and Prostitution** 3 ch (3C) [W]

This course examines the political and policy issues around the sex trade in Canada and internationally. *Prerequisite:* POLS 1301 or POLS 2601 or permission of the instructor.

POLS4611 **Special Topics in International Politics** 3 ch (3S/T) [W]

Advanced study of a specific subject in international politics. Course topics change annually.

POLS4632 **Unhealthy Cities** 3 ch (3C)

The course explores advanced topics in the relationship between cities, sustainable livelihoods and mental and physical health in connection with state policy and diverse social actors in local and international perspective. *Prerequisite:* POLS 3632.

POLS4646 **Directed Readings in International Politics** 3 ch [W]

Work on a research essay pertinent to specialized areas in international or comparative politics, under an instructor assigned by the discipline.

POLS4655 **Violence and Global Politics** 3 ch (3C) [W]

This course discusses mainstream and alternative interpretations to violence in global politics, with a particular focus on the power relations that produce or influence physical and non-physical harm on people and nature. Some of the topics covered are war, terrorism, and gang violence. *Prerequisite:* POLS 1301 or POLS 2601 or permission of the instructor.

PSYCHOLOGY

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

PSYC1003   **Introductory Psychology I**   **3 ch (3C)**

An overview of psychology as well as an introduction to the biological basis of behaviour, motivation, learning, sensation, perception, memory, thinking and language. Students may be requested to participate in research and some course credit may be earned in this way.

PSYC1004   **Introductory Psychology II**   **3 ch (3C)**

Examines social behaviour, personality, assessment, abnormal psychology, and psychological therapy. Students may be requested to participate in research and some course credit may be earned in this way. _Prerequisite:_ PSYC 1003.

PSYC1273   **Life Span Development**   **3 ch (3C)**

An introduction to theory, methods, and research findings in lifespan developmental psychology. The life cycle as a whole and basic processes in socialization, cognition, and personality development will be examined. This course is designed primarily for Nursing students. Enrolment of other students is by permission of the instructor. Students currently enrolled in the BN programme are exempt from the PSYC 1004 prerequisite requirement. **NOTE**: Students who take PSYC 1273 may not take PSYC 3201 or PSYC 3293.

PSYC2102   **Research Methods in Psychology**   **3 ch (3C 1L)**

An introduction to the methods and theory of empirical and experimental research in psychology. The logic of hypothesis construction and testing in relation to various areas of psychology is examined. Students will be required to complete an experiment. This course is intended for students who plan to major or honour in either Psychology or Biopsychology. _Prerequisite:_ A grade of C or better in PSYC 2901.

PSYC2693   **Foundation in Perception and Cognition**   **3 ch (3C)**

This course provides students with foundational knowledge in theory, methodology, and research findings in the field of cognitive psychology. Students who have completed this course will be adequately prepared to take upper level courses on topics such as sensation & perception, attention, memory, mental imagery, knowledge, language, thinking and reasoning. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC2712   **Foundations in Neuroscience**   **3 ch (3C)**

An introduction to the anatomy and physiology of nervous systems with a special emphasis on behavioural indices of function. Illustrative examples of both human and animal research are surveyed. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC2901 Introduction to Statistical Analysis for Psychologists   3 ch (3C)

Designed to acquaint the student with the basic tools of statistics which are used to summarize and analyze psychological data. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3033   **Health Psychology**   **3 ch (3C) (LE)**

An aggregate of the scientific and professional contributions of the discipline of psychology towards promotion of an holistic approach for the maintenance of health, the prevention and treatment of illness including etiologic as well as diagnostic correlates of health and illness. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3035   **Environmental Psychology**   **3 ch (3C)**

Examines the interplay between the individual and the environment. The influence of the positive and negative effects of the environment on human behaviour and well-being is examined. Topics include environmental risk perception; environmental stressors; the effects of natural and constructed environments.; the health effects of the environmental quality; including climate change risks; and suggested ways to foster pro-environmental behaviour. _Prerequisites:_ PSYC 1003 and 1004.

PSYC3201   **Child Development**   **3 ch (3C)**

A study of theory, methods and research findings in infancy and childhood. Examines social, cognitive, emotional and physical development. Credit will not be granted for both PSYC 3201 and ED 3021. Students who completed PSYC 2201 cannot get credit for PSYC 3201. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3263   **The Psychology of Criminal Behaviour**   **3 ch (3C)**

Examines psychological based theories of crime and the contribution of psychology to the understanding of criminal behaviour and the assessment and rehabilitation of offenders. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3265   **Forensic Psychology**   **3 ch (3C)**

This course will focus on the application of psychological principles within legal contexts (e.g., legal decision-making, eye witness memory) and in relation to policing practices (e.g., interrogation practices, credibility assessment). _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3293   **The Psychology of Aging**   **3 ch (3C)**

Focuses on changes in learning ability, memory, perception, physical development, personality and social development associated with aging, beginning in young adulthood and extending to late adulthood. _Prerequisite:_ PSYC 3201 or ED 3021.

PSYC3323   **Community Psychology and Mental Health**   **3 ch (2C 1S)**

Provides a detailed examination of how to evaluate programs in the community. Areas covered are mental health, criminal justice, and other systems that provide human services. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3343   **Human Sexuality**   **3 ch (3C)**

Provides an introduction to the psychology of human sexuality, including examination of topics such as sexual anatomy, sexual behaviour, sexual response, sexual dysfunction and therapy, sexual variation and other topics of interest. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3362   **Introduction to Guidance and Counselling**   **3 ch (3C)**

A survey of the concepts, theories, and resources involved in the guidance and counselling area. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3383   **Perception**   **3 ch (3C)**

Provides a broad introduction to visual and auditory perception. Topics include the structure and neural functioning of auditory and visual systems and contemporary approaches to traditional problems of perception. The course may include reviews of other sense modalities. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3393   **Systems of Therapy**   **3 ch (3C)**

The array of contemporary psychotherapeutic techniques is examined with emphasis on the relationship that exists between the theoretical and historical background of a therapy and the form it assumes when put into practice. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3401   **Social Psychology**   **3 ch (3C)**

The scientific study of how people think about, influence, and relate to one another. The course examines methods and findings related to topics such as the self in society, attitude formation, judging others, conformity, aggression, prejudice, and attraction. Students who completed PSYC 2401 cannot get credit for PSYC 3401. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3412   **Advanced Social Psychology**   **3 ch (3C)**

Further examines the scientific methods and findings that pertain to the functioning of individuals in social contexts. Topics include advanced methods used to study groups, aggression, prejudice, attraction and altruism. _Prerequisite:_ PSYC 3401.

PSYC3414   **Media Psychology and Technology**   **3 ch (3C)**

This course will introduce students to the topic of media psychology. Students will learn about the theories and research frameworks that seek to explain (1) how we process media and (2) how media influences our attitudes, beliefs, and behaviours. Special attention will be given to specific topics like advertising, media violence, sex in the media, and social media. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3416   **Psychology of Happiness**   **3 ch (3C)**

Examines the study of individual characteristics and environmental factors that are associated with increased subjective well-being. Topics will include loss and trauma, models of personality, emotional expressivity and valence, mindfulness, and psychological resilience. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3453   **Cross Cultural Psychology (O)**   **3 ch (3C)**

Cross cultural influences on behaviour, cognition, motivation, and personality variation. Methodological issues are examined. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3461   **Theories of Personality**   **3 ch (3C)**

Theory formation is greatly influenced by the assumptions, beliefs and experience of the theorist. In surveying formal theories of personality, an attempt is made to demonstrate the influence of personal-subjective factors in the development of theory. _Prerequisites:_ PSYC 1003 and PSYC 1004.

PSYC3493   **Changing Behaviour**   3 ch (3C)

An examination of the application of basic principles of learning to human behavioural processes. A study of the treatment techniques and assessment procedures employed in behaviour modification programs. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3503   **Learning**   3 ch (3C)

A survey of principles of both instrumental and classical conditioning focusing on animal subjects. Such topics as biological constraints on learning, cognitive interpretations of learning, and memory processes will be included. There will be various demonstrations throughout the course. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3553   **Psychopathology**   3 ch (3C)

This course will provide the student with a comprehensive picture of maladaptive behaviour from a biological and psychosocial perspective. Problems associated with diagnostic systems, the role of stress, and other causative factors implicated in the traditional clinical syndromes will be discussed. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3603   **Selective Attention and Memory**   3ch (3C/SL)

An examination of the processes involved in the reception, election and storage of information. *Prerequisite:* PSYC 2693.

PSYC3632   **Motivation**   3 ch (3C)

A critical examination of the concept of motivation in terms of its power to explain findings in the experimental literature and its capacity to generate research. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3695   **Psychology of Music**   3 ch (3C)

This course will provide a broad introduction to the psychology of music. Topics covered will include the origins of music in humans, music acquisition during childhood and adolescence, how music interacts with emotions, well-being, and other cognitive abilites, the process of performing music, and the neuroscience of music. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3712   **Behavioural Neuroscience**   3 ch (3C)

This course builds on the basic principles of biological psychology by exploring in detail the brain processes related to topics such as memory, consciousness, and cognitive processes, as well as sensation and perception. *Prerequisite:* PSYC 2712.

PSYC3714 Animal Communication (Cross-Listed: BIOL 3714)   3 ch (3C)

An overview of animal communication and its biological significance, with emphasis on vocal communication. The course will discuss various systems of communication in terms of production, perception, and the conveyance of vital information, with reference and comparison to human communication where applicable. The ways in which communication systems are shaped by - and in some cases contribute to - evolutionary processes will also be discussed. *Prerequisites:* PSYC1003 and PSYC1004, or BIOL1105 and BIOL 1205.

PSYC3723   **Introduction to Human Neuropsychology**   3 ch (3C)

A review of human neuroanatomy with a focus on recent theories and findings regarding the functional organization of the brain. The principles of cerebral asymmetry, disconnection syndromes, and the functions of the occipital, parietal, temporal, and frontal lobes are examined. A special emphasis is placed on the role of brain systems in sensory motor skills, higher order cognitive functions and personality. *Prerequisite:* PSYC 2712.

PSYC3724   **Introduction to Clinical Neuropsychology**   3 ch (3C)
                     (Cross-Listed: HEAL 3102)

Explores the neuropsychological sequelae of the most common neurological and psychiatric disorders seen in the practice of clinical neuropsychology, including vascular disorders, traumatic head injuries, epilepsy, tumours, multiple sclerosis, anxiety, depression, schizophrenia, dementia, and neuro-degenerative conditions, such as Alzheimer's disease. *Prerequisite:* PSYC 2712 or PSYC 3723.

PSYC3725   **The Dementias**   3 ch (3C)

An introduction to a devastating group of diseases which cause irreversible decline in cognitive functioning and for which the incidence is expected to triple by the year 2031. The etiological models, cognitive, emotional, and behavioural changes, treatment, care, and management issues of the most common types of dementias are explored including cortical (e.g., Alzheimer's disease, Vascular Dementia, Frontal Lobe Diseases) and subcortical (e.g., Parkinson's Disease, Huntington's Disease, Multiple Sclerosis, and AIDS) dementias. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3726 Neurobiology of Learning (Cross-Listed: HEAL 3103)3 ch (3C)

In this course students will explore the process of memory and corresponding anatomic regions of the brain that are involved in learning and memory. Using a series of podcasts, webinars, and interactive workshops, students will explore the current understanding of the neurobiology of learning and memory. Required neuroanatomy linked with memory, attention, consolidation, recall, and cognitive load will be reviewed. In this course, students will apply basic concepts to their individual ares of interest. *Prerequisite:* PSYC 2712 and one of BIOL 1415, BIOL 2015, BIOL 2065, BIOL 2245, BIOL 2485 OR permission of the instructor.

PSYC3743   **Comparative Psychology**   3 ch (3C)

Development of psychological theory by the comparison of data from different species. Emphasizes the evolution and adaptive significance of behaviour. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3752   **Drugs and Behaviour**   3 ch (3C)

A survey of all classes of psychoactive drugs, their effects on human and animal physiology and behaviour, their history of use, and various drug-related issues such as abuse, dependency, and legality. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3803   **Industrial Psychology**   3 ch (3C)

Application of psychological knowledge to business and industrial problems. *Prerequisites:* PSYC 1003 and PSYC 1004.

PSYC3913   **Introduction to Statistical Inference and**   3 ch (3C 1L)
                     Experimental Design in Psychology

This course provides an introduction to research design and statistical interference in psychology. Topics covered are computational procedures and theory up to analysis of variance, including multiple comparisons and multiple regression. Students will also learn how to analyse data using one or more statistical packages. **NOTE:** Credit can be obtained for only one of STAT 2793, BA 2606, PSYC 3913. *Prerequisites:* PSYC 2102 and PSYC 2901.

PSYC4021   Cognitive and Psychophysiological Research 3 ch (3C) [W]

Deals with research scenarios that involve measuring cognitive and physiological correlates of human functioning. Measurements reflect processes and conditions related to stress, cognitive functioning, motivation and individual differences. *Prerequisite:* PSYC 2102.

PSYC4053   **History of Psychology**   3 ch (3C)

This course traces the origins and development of modern psychology from its roots in ancient Greece through the philosophical and scientific developments in Europe that have culminated in the broad polymorphic discipline of today. *Prerequisites:* PSYC 1004 and 60 ch in any discipline.

PSYC4101   **Advanced Topics in Psychology**   3 ch [W]

An advanced course that will provide in-depth analysis of current theory, research and its applications in a specific area of psychology. This course traces the origins and development of modern psychology from its roots in ancient Greece through the philosophical and scientific developments in Europe that have culminated in the broad polymorphic discipline of today. *Prerequisite:* PSYC 1004 and completion of 60 ch in any discipline.

PSYC4111   **Conducting Research Studies**   3 ch [W]

The purpose is to enable students to become actively involved in basic research. This involvement will take the form of participation in research, reading and discussion of research topics, and development of research skills. *Prerequisite.* PSYC 2102 or an alternate research methods course approved by the instructor.

PSYC4122   **Basic Research II**   3 ch (3S)

Continuation of PSYC 4111. *Prerequisites:* PSYC 4111 or permission of the instructor.

PSYC4142   **Honours Research Seminar**   3 ch

In this seminar course, students will be exposed topics relevant to the research process, including future opportunities for students, ethics requirements for animal and human research, research design, data analyses, writing and presenting, etc. *Prerequisite:* One of: PSYC 4111, PSYC 4122, PSYC 4201 and acceptance into the Psychology Honours Program.

PSYC4143   **Designing Research Proposals**   3 ch [W]

Under the direction of a supervisor a student develops a proposal which is assessed and approved by the Department. *Prerequisite:* Acceptance into the Psychology Honours Program. A letter grade will be assigned.

PSYC4145　　　　Honours Thesis　　　　3 ch [W]

Under the direction of a supervisor a student conducts, completes and defends the research. *Prerequisite:* A grade of B+ or higher in PSYC 4143. A letter grade will be assigned.

PSYC4201　Special Topics in Experimental Psychology　3 ch [W]

An advanced course in research design. Topics will include research ethics, research design, and synthesis of research results. *Prerequisite:* PSYC 2102. Not suitable for students who have completed or are enrolled in PSYC 4142.

PSYC4233　　　　Programme Evaluation　　　3 ch (3C) [W]

A seminar course focusing on review of the principles and methods used in planning and conducting programme evaluations. A basic introduction to the review and assessment of applied/clinical research using meta-analytic methods. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor.

PSYC4263　Field Placement in Community Corrections I　3 ch (LE)

The field placement is designed to provide students with practical experience in a community correctional setting that provides services for federal paroles. The course has limited enrolment and is open to 3rd - 4th year psychology & sociology majors. *Prerequisites:* PSYC 3263 and PSYC 3493 and SOCI 2611 and SOCI 3614; 3rd - 4th year PSYC/SOCI, Cumulative GPA=B (exceptions may be made at the discretion of the instructors).

PSYC4264　Field Placement in Community Corrections II　3 ch (LE)

The field placement is designed to provide students with additional practical experience in a community correctional setting that provides services for federal paroles. The course has limited enrolment and is open to 3rd - 4th year psychology & sociology majors. *Prerequisites:* PSYC 3263 and PSYC 3493 and SOCI 2611 and SOCI 3614; 3rd - 4th year PSYC/SOCI, with a minimum Cumulative GPA of 3.0 (exceptions may be made at the discretion of the instructors).

PSYC4265　Field Placement in Clinical Psychology　3 ch (3C) (LE)

Exposure to community mental health settings, with the goal of gaining applied supervised experience with individuals who have mental health, behavioural and/or intellectual challenges. Enrolment is limited to Psychology Major/Honour students with a minimum CGPA of 3.3 (B+) and is subject to permission of the instructor. *Prerequisites:* PSYC 3553, PSYC 3493, and either PSYC 3362 or PSYC 3393.

PSYC4266　　　　Field Placement in Aging I　　　3 ch (LE)

This field placement is designed to provide students with experience working with the elderly. Students who will gain practical experience (e.g. working with Recreationists creating programming opportunities for residents; learning about proper approaches to interact with elderly, etc.) Students will work for 3 hours a week for the duration of the term in their field placement. This course has limited enrolment, and is open to fourth year students completing the Minor in Gerontology. *Prerequisite:* PSYC 3293 and permission of the field placement co-ordinator.

PSYC4267　　　　Field Placement in Aging II　　　3 ch (LE)

A continuation of PSYC 4266. This field placement is designed to provide students with experience working with the elderly. Students will gain practical experience. (e.g., working with Recreationists creating programming opportunities for residents; learning about proper approaches to interact with elderly,etc). Students will work for 3 hours a week during the duration of the term in their field placement. This course has limited enrolment, and is open to fourth year students completing the Minor in Gerontology. *Prerequisite:* PSYC 3293 and permission of the field placement co-ordinator.

PSYC4293　　　　Adolescence　　　　3 ch (3C/S) [W]

A seminar course examining physical, cognitive, social and emotional development in adolescence. *Prerequisites:* PSYC 3201 and PSYC 2102 or an alternate research methods course approved by the instructor. **NOTE:** Students who take PSYC 1273 may not take PSYC 3201, PSYC 3293, or PSYC 4293.

PSYC4313　　　　Psychological Testing　　　3 ch (3C/L) [W]

A seminar course focusing on Psychometric Theory and principles of psychological testing as they arise in consideration of relevant statistical concepts and methods and of historical experience in development and use of tests for general intelligence, differential abilities and personality traits. *Prerequisite:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 3913.

PSYC4463　　　　Attachment and Relationships　　3 ch (C/S) [W]

A seminar course focusing on an in-depth analysis of selected topics in personality theory and research. Possible topics include attachment, interpersonal relations and communication, intimacy, loneliness, solitude, and issues in personality assessment. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 3461.

PSYC4493　　　Developmental Psychopathology　3 ch (3C/S) [W]

A seminar course that introduces students to the literature of maladaptive behaviour within the developmental perspective. Specific disorders of childhood and adolescence will be included in the seminar topics. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 3201 and PSYC 3553 or permission of instructor.

PSYC4583　　　　Advanced Perception　　　3 ch (3C) [W]

A seminar course that provides an in-depth discussion and analysis of selected problems in perception. Topics may include temporal factors in perception, optical illusions, spatial frequency representation, perceptual development, motion perception. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor, PSYC 3383.

PSYC4712　Neuroplasticity (Cross-Listed: HEAL 4102)　3 ch (3C) [W]

A seminar course exploring the topic of plasticity within the central nervous system. Neuroplasticity will be discussed at a variety of levels, from individual neurons to large-scale brain changes, and with reference to learning and memory, neuropathology, lifestyle, and other factors. *Prerequisite:* PSYC 3712, PSYC 3723.

PSYC4733　　　　Cognitive Neuroscience　　　3 ch (3C/S) [W]

A seminar course that deals with contemporary neurological models of perception and cognition. Topics will be selected to reflect the expertise of faculty. They may include computational networks, blind sight, prosopagnosia, lateralization, etc. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor, PSYC 2712, and either PSYC 3383 or PSYC 2693.

PSYC4813　　　　Substance Use Disorders　　　3 ch (3C) [W]

A seminar course that covers a broad spectrum of topics in the area of addiction including the epidemiology of substance abuse and dependence, the biopsychosocial bases of addiction, as well as, issues of comorbidity and treatment. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor and one of PSYC 3752 or PSYC 4833.

PSYC4833　　　　Psychopharmacology　　　3 ch (3C) [W]

A seminar course focusing on the drugs used in the treatment of depression, anxiety, panic disorder, obsessive-compulsive disorder, phobias, schizophrenia, dementias, and related disorders. The emphasis is on the biological bases of these syndromes and the pharmacological agents used to alleviate them. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 2712.

SCIENCE

SCI1001　University Skills for Science Students　2 ch (2C)

This course introduces first year students to skills which will assist in their success in first year university. Helps students develop their self-assessment skills and their approaches to problem solving.

SCI1831　　　What On Earth Isn't Chemistry　　3 ch (3C)
　　　　　　　　(Cross-Listed: CHEM 1831)

Intended for students (with limited chemistry background) who wish to gain a better understanding of the chemistry in the world around them. The course will cover aspects of: atomic and molecular structure, the periodic table, what chemical names mean, balancing equations (and the relationships involved), acids and bases, nuclear chemistry, radiation and organic compounds. The concepts will be examined in the context of understanding "everyday" chemistry. This course cannot be used as a substitute for any other first level Chemistry course.

SCI1862　　　　Shaping the Earth's Surface　　　3 ch (3C)

Designed for the non-scientist. Examines the basic geological forces that shape the earth's surface and our environment. Subjects include volcanism, earthquakes, erosion, soils, groundwater, rivers, coastlines, deserts, landslides, and the earth's past, present and possible future climates.

SCI1872　Basic Physics and Astronomy for Non-Scientists　3 ch (3C)

Overview of physics and astronomy from the perspective of historic development and fundamental principles of science. Topics include: concepts of force, energy and wave; survey of astronomy tracing development of our view of the universe. Offered in alternate years with SCI 1862 (Shaping the Earth's Surface). *Prerequisites:* High School math and science courses are an asset.

SECTION F: SAINT JOHN COURSES

SCI1892   The History and Challenges of Human Spaceflight   3 ch (3C)

People have been entering space since 1961, with the flight of Soviet cosmonaut Yuri Gagarin. Now with the passage of more than half a century, is it worth reflecting on what human spaceflight has accomplished, how it is achieved, and what challenges it faces moving forward. *Prerequisite:* High School grade 11.

SCI3155   Women and Science   3 ch (3C)

An overview of women's historical and contemporary participation in science, issues in science and math education, feminist critiques and theories on science and gender, and the impact of technology on women's lives. *Prerequisite:* GEND 2001 (pre- or co-) or 30 ch of any SASE program.

SCI3255   Women, Development and the Environment   3 ch (3C)

An examination of the effects of the status of women, poverty, population growth and economics on the state of the environment and conservation in developing nations. Environmental issues to be discussed include: over cultivation and deforestation, over fishing, poaching, antibiotic resistance, migration, biodiversity, extinction and resource depletion. *Prerequisites:* GEND 2001 (pre- or co-) or 30 ch of any SASE program.

SOCIAL SCIENCE

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

SOCS4501   Social Science in Practicum Courses   3 ch (3C/S)

Combined seminar and independent study course that provides students with a minimum 60 hours of volunteer or paid work experience working in an organization, institution or business related to their disciplines. Students must apply to the instructor a minimum of four weeks prior to the course start date so work placements can be arranged. *Prerequisite:* Successful completion of 30 term-courses and a minimum CGPA of 3.0. Please note that these minimum requirements do not guarantee acceptance into SOCS 4501. Admittance is competitive and dependent on the availability of suitable workplace internships.

SOCIOLOGY

NOTE: See beginning of Section F for abbreviations, course numbers and coding.
Unless otherwise indicated, students must complete Sociology 1001 before taking any sociology courses at the 2000 level or above. Students are required to complete at least three term-courses of sociology at the lower level (1000-2000 courses) before enrolling in any third-year sociology courses. Students who are not majoring or honouring in Sociology will be admitted to a 4000 level course only if they have completed six term-courses of Sociology and have consulted with the instructor.
A minimum grade of C (2.0) is mandatory for all sociology courses required as *Prerequisites* or taken to meet the Majors and Honours requirements.

SOCI1001   Introduction to Sociology   3 ch (3C) [W]

This course provides students with a general of sociological theories (both classical and contemporary) and methods (both qualitative and quantitative), while also demonstrating how socioloy differentiates itself from other disciplines. Students will exposed to foundational concepts such as inequality, solidarity, patriarchy, etc.

SOCI2004   Early Social Theory   3 ch (3C) [W]*

This course introduces students to developments within social theory since its origins in the 19th century. The writings of Marx, Durkheim. Will be eamined along with more recent contributers to the field. Students who have taken SOCI 3000 cannot also get credit for SOCI 2004. In addition, students who have taken SOCI 3008 cannot get credit for this course. *Prerequisites:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2008   Sociological Approaches for Understnding   3 ch (3C) [W]
Indigenous Experiences

This course provides students with a sociological perspective on Indigenous Peoples' relationship with the colonization/decolonization process in Canada. Topics may include racism/anti-racism, indigenous and treaty rights, indigenous-settler alliances, constitutional issues, the findings and recommendations of the Truth and Reconciliation Commission, etc. Through lectures and discussions, students will gain a better understanding of how indigenous-settler relations have shaped the structure of Canadian and Indigenous societies. *Prerequisites*: SOCI 1001 or equivalent with a grade of C or better.

SOCI2205   Interpersonal Relations (O)   3 ch (3C) [W]

An introduction to a variety of perspectives designed to provide insight into social interaction on the interpersonal level. Attention is also given to some of the methodological problems involved in achieving a better

understanding of this area of social life. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2251   Film and Society Prior to World War II   3 ch (3C) [W]

This course examines the rise of the North American film industry, its organization and its current cultural influence. It investigates the history of early film, the rise of the studio system, the star as celebrity, the emergence of a number of film aesthetics, and it analyses how film has represented social issues especially those of class, gender and race. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2323   Sociology of Work   3 ch (3C) [W]

Examines the changing nature and organization of work within the context of regional, national and international developments. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2376   Sociology of Health, Illness and Healing (O)   3 ch (3C) [W]

Examines the social nature and consequences of health, illness and healing and looks at medicine as a form of social control. Areas to be covered include the delivery of health care, social construction of medical knowledge, social inequality and its impact on health and disease. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2413   Canadian Society (O)   3 ch (3C) [W]

Examines the historical preconditions, current processes in and structure of Canadian society. This may include French-English relations, regionalism, native rights, Canadian mosaic and position in the world system. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2501   Introduction to Gender and Gender Studies   3 ch (3C) [W]

An introduction to gender and gender studies from a sociological viewpoint with some consideration of interdisciplinary perspectives. Examines basic concepts, approaches, and methods pertinent to understanding gender relations and divisions in a global and historical context. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better. **NOTE**: Students who take SOCI 2501 may not receive credit for GEND 2001.

SOCI2533   Social Movements and Social Revolutions (A)   3 ch (3C) [W]

An analysis of social movements and revolutions from a sociological perspective. Emphasis is on critical understanding of why they arise, why some fail and why others succeed. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2611   Anti-Criminology (A)   3 ch (3C) [W]

Introduces students to the new sub-field of anti-criminology. Focuses on qualitative criminological developments since the pioneering work of Howard Becker. Emphasis will be placed on interactionist, ethnomethodological, feminist and other micro-level analyses which constantly challenge and provoke the criminological canon. *Prerequisite:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2615   Historical Sociology I (O)   3 ch (3C) [W]

Introduction to historical and sociological understanding of modern and post-modern societies. Particular emphasis will be placed on Canada and Europe. *Prerequisites:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2802   Introduction to Visual Sociology   3 ch (3C) [W]

This course examines the history of visual documentation and research by social scientists, indigenous persons and cultural activists; by looking primiarily at how photography and film are employed in fieldwork and in rapidly exanding global modes of presentation. This course emphasizes the students' creative and critical abilities. *Prerequisites:* SOCI 1001 or equivalent with a grade of C or better.

SOCI2805   Sociological Persectives on Cannabis   3 ch (3C) [W]
Use in Canada

This course applies a number of of sociological perspectives to understand the history, emergence and social implications of cannabis reforms and related legislation. In broad terms, the course asks students to think about interest groups, civil rights, power and authority, mental health and addictions, criminal justice, enforcement and punishment, and managing problematic issues like the opiod crisis. *Prerequisites:* SOCI 1001 or equivalent with a grade of C or better.

SOCI3009   Modern Social Theory   3 ch (3C) [W]

This course familiarizes students with developments in modern social theory. Focus will be placed on contemporary theoretical issues and debates within the field. Students who have taken SOCI 3000 cannot also get credit for SOCI 3009. *Prerequisite*: SOCI 2004 or SOCI 3008 with a C or better.

SOCI3104   Quantitative Methods in the Social Sciences   3 ch (3C)

Introduces students to the logic and main stages of quantitative research, covering research design, sampling, measurement, data collection methods, and statistical analysis as well as research ethics. *Prerequisites:* SOCI 1001 or equivalent and two term-courses in lower level Sociology, all with grades of C or better.

SOCI3105   Qualitative Methods in the Social Sciences   3 ch (3C) [W]

Introduces students to the inter-disciplinary emergence of qualitative methods (e.g., feminist, interactionist, textual), with an emphasis on epistemological, philosophical and reflexive concerns as well as practical applications. *Prerequisites:* SOCI 1001 or equivalent and two term-courses in lower level Sociology, all with grades of C or better.

SOCI3214   Sociology of Communications: 3 ch (3C) [W]
Canadian Culture Through Film

A sociological examination of the principal ways communications can be understood. The course examines how Canadian films have addressed issues of regional identity, electronic communications (McLuhan), and national identity. *Prerequisites:* SOCI 1001, or equivalent and two term-courses of lower level Sociology, with grades of C or better. COMS students: SOCI 1001, SOCI 2251 and COMS 2001, all with grades of C or better.

SOCI3217   Film and Society III   3 ch (3C) [W]

This course will investigate the relationship between film and society and will focus its attention on contemporary film. *Prerequisites:* SOCI 1001, SOCI 2251 plus 1 additional term-course at the 2000-level in Sociology, with a grade of C or better in all three courses, or permission of the instructor.

SOCI3251   Film and Society from WWII to the 1960s   3 ch (3C) [W]

This course provides a broad-based introduction to the interdisciplinary field of the sociology of film. It investigates the relationship between film and society and focuses its attention on post World War II Hollywood Films, Italian Neo-realist and French New Wave films. *Prerequisites:* SOCI 1001 or equivalent, SOCI 2251 and one additional and term-course in lower level Sociology, all with grades of C or better. COMS students: SOCI 1001, SOCI 2251, and COMS 2001, all with grades of C or better.

SOCI3257   Film and Society from the 1960s   3 ch (3C) [W]
to the Present Day

This course will investigate the relationship between film and society and will focus its attention on contemporary film. *Prerequisites:* SOCI 1001, or equivalent, SOCI 2251 and one additional term-course in lower level Sociology, all with grades of C or better. COMS students: SOCI 1001, SOCI 2251, and COMS 2001, all with grades of C or better.

SOCI3376   Mental Health, Addictions & Wellbeing   3 ch (3C) [W]
This course critically examines how we understand, label, define, diagnose, talk about and respond to mental health and addictions. Social construction of health and social determinants of health frameworks are introduced. Topics may include dual and concurrent diagnoses, gambling and substance use, deinstitutionalization and system responses, community mental health, stigmatization, and poverty. *Prerequisites:* SOCI 1001 or equivalent and two term courses in lower level sociology, all with grades of C or better.

SOCI3517   Sociology of Culture (O)   3 ch (3C) [W]

Examines the historical emergence of contemporary western culture. Some cross-cultural comparisons will also be examined. *Prerequisites:* SOCI 1001 or equivalent and two term-courses in lower level Sociology, all with grades of C or better.

SOCI3614   Anti-Criminology II (A)   3 ch (3C) [W]

Advanced study in the field of anti-criminology. Focuses on developments in the field of critical criminology since the emergence of "The New Criminology" and "Discipline & Punishment". Emphasis will be placed on the critical analysis of our western systems of criminal justice. *Prerequisites:* SOCI 1001 or equivalent, SOCI 2611 and one term-course in lower level Sociology, all with grades of C or better.

SOCI3615   Historical Sociology II (O)   3 ch (3C) [W]

Advanced study of socio-cultural and socio-historical transformations in Western societies. Emphasis will be placed on the critical literature in this field, and the detailed analysis of specific empirical transformations. Course topics change annually. *Prerequisites:* SOCI 1001 or equivalent, SOCI 2615 and one term-course in lower level Sociology, all with grades of C or better.

SOCI3701   Sociology of Urban Life   3 ch (3C) [W]
This course applies a sociological lens to the impacts of urbanization on social life and to the issues urban areas currently face. *Prerequisites:*

SOCI 1001 or equivalent and two term-courses in lower level sociology, all with grades of C or better.

SOCI3889   Sociology of Indigenous Issues and Culture (O) 3 ch (3C) [W]

Provides a socio-historical analysis of a range of issues facing First Nations, Inuit, and Métis people in Canada today. Includes an examination of the colonization process through a focus on treaties, The Indian Act, the reserve system, and residential schools. *Prerequisites:* SOCI 1001 or equivalent and two-term courses in lower level Sociology, all with grades of C or better.

SOCI4014   Designing Research Proposals   3 ch (3S) [W]

Under the direction of a supervisor, an Honours student develops a proposal which is approved by the Discipline. *Prerequisites:* SOCI 1001 or equivalent, two term-courses in lower level Sociology (including SOCI 2004), and SOCI 3009, 3104 and SOCI 3105, all with grades of C or better. CGPA of 3.3 or higher is required.

SOCI4015   Honours Thesis   3 ch (3S) [W]

Under the direction of a supervisor, an Honours student carries out an approved project and completes and defends a thesis. *Prerequisites:* SOCI 1001 or equivalent, two term-courses in lower level Sociology (including SOCI 2004), SOCI 3009, SOCI 3104, SOCI 3105, and SOCI 4014, all with grades of C or better. CGPA of 3.0 or higher is required.

SOCI4023   Special Topics in Sociological Theory (O)   3 ch (3S) [W]

Intensive study of a selected theorist or theory group or selected issues in sociological theory. *Prerequisites:* SOCI 1001 or equivalent, two term-courses in lower level Sociology (including SOCI 2004), SOCI 3009 and one term-course in upper level Sociology, all with grades of C or better.

SOCI4263   Discourse and Text (O)   3 ch (3S) [W]

Advanced studies in discourse and textual analysis. Topics may vary from year to year, but will typically cover a selection from the following intellectual schools: phenomenology, ethnomethodology, conversation analysis, discourse analysis, cultural studies, post-structuralism, deconstruction, and feminism. *Prerequisites:* SOCI 1001 or equivalent, two term-courses in lower level Sociology, SOCI 3105, and two term-courses in upper level Sociology, all with grades of C or better.

SOCI4379   Community Based Health Research Seminar   3 ch (3C) [W]

Experiential education course in community-based health research. Exploration of topics related to community health and wellbeing. *Prerequisite:* SOCI 1001 or equivalent, two term-courses in lower level Sociology (including SOCI 2004), and SOCI 3009, 3104 and 3015, all with grades of C or better. CGPA of 3.3 or higher is required.

SOCI4503   Research Seminar in Popular Culture   3 ch (3S) [W]

This course examines the daily cultural artifacts that surround us, their multitude of meanings, and their use by social actors. This course will provide a historical background for understanding contemporary popular culture, and will investigate current theoretical debates on mass culture, popular culture and postmodernism. **NOTE:** Students who have taken SOCI 3000 cannot also get credit for SOCI 3009. *Prerequisites:* Sociology students - complete SOCI 1001 or equivalent, two-term courses in lower level Sociology (inlcuding SOCI 2004), SOCI 3009, and one of SOCI 3104 or SOCI 3105, all with grades of C or better. COMS Majors and Double-Major students - COMS 1001, COMS 1002, COMS 2001, COMS 3001 and COMS 3003, all with grades of C or better. CGPA 3.3 or higher is required.

SOCI4505   Society and Sex Work (O)   3 ch (3S) [W]
(Cross-Listed: POLS 4505)

Examines sex work as a social issue. Topics include radical, liberal and socialist feminist understandings of prostitution; sex workers' standpoints; criminological implications. *Prerequisites:* SOCI 1001 or equivalent, and two term-courses in lower level Sociology, and three term-courses in upper level Sociology, all with grades of C or better. Credit cannot be given for both SOCI 4505 and POLS 4505.

SOCI4555   Gender and Organization (O)   3 ch (3C) [W]

An advanced focus on how gender and organization(s) are mutually constituting, and how other sources of diversity (e.g., race, sexual orientation, class) intersect with gender, informing organizational structures and processes and our experiences with them. Examines feminist critiques of traditional approaches to organization; feminist conceptualizes of gender and organization; empirical studies of men and women in particular organizations (e.g., business, police, military, health care, educational organizations). *Prerequisites:* SOCI 1001 or equivalent, one of either SOCI 2501 or GEND 2001, one term-course in lower level Sociology, and three term-courses in upper level Sociology, all with grades of C or better.

SOCI4989   Cultural Marxism 7G   3 ch (3C) [W]

327

This course examines the development of Marxism (and related fields) over the 7 generations since Marx's original analyses. Although attention will be paid to the first 5 generations of Marxist scholarship, our main focus will be on generations 6 and 7; that is, with more contemporary formulations of 'cultural Marxism'. *Prerequisites*: SOCI 1001, SOCI 2004, SOCI 3009

SPANISH

SPAN1203   **Introductory Spanish I**   **3 ch**

Designed to give beginners a sound basic knowledge of Spanish. Explains fundamentals of grammar with some reading at the elementary level. Language laboratory available for oral practice.

SPAN1204   **Introductory Spanish II**   **3 ch**

Continuation of SPAN 1203. *Prerequisite:* SPAN 1203 or equivalent.

SPAN2203   **Intermediate Spanish I**   **3 ch**

Designed to consolidate and to develop language skills acquired in SPAN 1203 and SPAN 1204. Fundamentals of grammar will be completed and modern Spanish and Spanish American authors read. Audio-visual materials are also used. *Prerequisite:* SPAN 1204 or equivalent.

SPAN2204   **Intermediate Spanish II**   **3 ch**

Continuation of SPAN 2203. *Prerequisite:* SPAN 2203 or equivalent.

SPAN3007 Fundamentals of Spanish Language and Culture (O) 3 ch (3C)

This intensive course combines the study of language and culture and targets the development of all four basic skills: speaking, listening, reading, and writing to extend intermediate level proficiency. It also offers an opportunity to create a contemporary, and interesting context for meaningful communication with the Spanish-speaking world. *Prerequisite:* SPAN 2204 or permission of the instructor.

SPAN3011   **Hispanic American Civilization**   **3 ch**

Various aspects of Hispanic American civilization are examined, including geography, history, art, literature, society and contemporary problems. *Prerequisite*: SPAN 2204 or permission of the instructor.

SPAN3101   **Special Topics**   **3 ch**

This course focuses on specialized areas of interest. Taught primarily in Spanish. *Prerequisite:* SPAN 2204 or permission of the instructor.

SPAN3974   Contemporary Spanish American Prose Fiction   3 ch (3S)

Representative novels and short stories by Spanish-American writers including Borges, Vargas, Llosa, Garcia Marquez, and Paz whose works exemplify the social conflicts and ideological contradictions of the region. Taught in Spanish. *Prerequisite:* SPAN 2204 or permission of the instructor.

STATISTICS

NOTE: See beginning of Section F for abbreviations, course numbers and coding.

STAT1793   **Introduction to Probability and Statistics I**   **3 ch (3C)**

Concepts of population and sample, data collection, descriptive statistics and exploratory data analysis, frequency distributions, basic probability concepts, random variables, discrete and continuous probability models and their applications, central limit theorem and its applications and an introduction to statistical inference. **NOTE**: Credit can be obtained for only one of STAT 1793, STAT 2263, STAT 2593, BA 1605, PSYC 2901. *Prerequisite:* Grade 12 Mathematics.

STAT2263   **Statistics for Health Sciences and**   **3 ch (3C)**
                              Non-Science Majors

An introductory course in statistics. Experiments, sampling, basic descriptive statistics. Probability, random variables, Normal distribution. Confidence intervals for means and proportions. Tests of hypotheses. paired samples vs. two independent samples. Contingency tables. Regression, correlation. Introduction to analysis of variance. Examples drawn from the health sciences. Use of a statistical computer package. **NOTE**: Credit can be obtained for only one of STAT 1793, STAT 2263, STAT 2593, BA 1605, PSYC 2901. *Prerequisite:* A New Brunswick high school mathematics course, either Pre-Calculus 110 or Foundations of Mathematics 120, or equivalent.

STAT2593   **Probability and Statistics for Engineers**   **3 ch (3C)**

Probability spaces: combinatorial probability, conditional probability, and independence. Random variables: discrete distributions, continuous distributions, expectation, variance, and covariance; linear combinations. Statistics: descriptive and graphical statistics; sampling; distributions. Inference: point estimation, confidence intervals; hypothesis tests; paired data designs; two sample inference, linear regression. **NOTE**: Credit can

be obtained for only one of STAT 1793, STAT 2263, STAT 2593, BA 1605, PSYC 2901. *Prerequisite:* MATH 1013.

STAT2793   **Introduction to Probability and Statistics II**   **3 ch (3C)**

Concepts of estimation and test of hypothesis, sampling distributions, confidence interval estimation and test of hypothesis for proportion(s), mean(s) and standard deviation(s), association and trend analysis, elementary experimental designs and analysis of variance. **NOTE**: Credit can be obtained for only one of STAT 2793, BA 2606, PSYC 3913. *Prerequisite:* STAT 1793.

STAT3703   **Experimental Design (A)**   **3 ch (3C)**

Experimental Design methods and theory, one-way and two-way classification models, split plot designs, incomplete blocks, response surface designs. Special emphasis on applications. *Prerequisite:* One of STAT 2793, BA 2606, PSYC 3913.

STAT3793   **Probability and Mathematical Statistics I (A)**   **3 ch (3C)**

The first half of a two-part sequence covering various topics in probability and statistics. This course provides an introduction to probability theory and the theory of random variables and their distributions. Probability laws. Discrete and continuous random variables. Means, variances and moment generating functions. Sums of random variables. Joint discrete distributions. Central Limit Theorem. Examples drawn from engineering, science, computer science and business. *Prerequisites:* MATH 1013 (or B+ or higher in MATH 1001) and one of STAT 1793, STAT 2263, STAT 2593, BA 1605, PSYC 2901; or permission of the instructor.

STAT4043   **Sample Survey Theory (O)**   **3 ch (3C)**

Simple random sampling; stratified sampling; systematic sampling; multistage sampling; double sampling, ratio and regression estimates; sources of error in surveys. *Prerequisite:* One of STAT 2793, BA 2606, PSYC 3913.

STAT4203   **Introduction to Multivariate Data Analysis (O)**   **3 ch (3C)**

Multivariate normal distribution; multivariate regression and the analysis of variance; canonical correlations; principal components; classification procedures; factor analysis; computer applications. Student should have some exposure to matrix algebra. *Prerequisite:* One of STAT 2793/BA 2606/PSYC 3913, MATH 1503 or MATH 2213 (or permission of the instructor).

STAT4243   **Statistical Computing (O)**   **3 ch (3C)**

Course will include random number generation, simulation of random variables and processes, Monte Carlo techniques and integral estimation, the computation of percentage points and percentiles, as well as resampling methods. *Prerequisites:* One of STAT 2793/BA 2606/PSYC 3913, and CS 1073 or CS 1003 (or permission of the instructor).

STAT4703   **Regression Analysis (A)**   **3 ch (3C)**

Simple and multiple linear regression, least squares estimates and their properties, tests of hypotheses, F-test, general linear model, prediction and confidence intervals. Orthogonal and non-orthogonal designs. Weighted least squares. Use of a statistical computer package. **NOTE**: Credit can be obtained, for only one of STAT 4703, and ECON 4645. *Prerequisite:* One of STAT 2793/BA 2606/PSYC 3913 (or permission of instructor).

STAT4793   **Probability and Mathematical Statistics II (A)**   **3 ch (3C)**

The second half of a two part sequence covering various topics in probability and statistics. This course provides and introduction to essential techniques of statistical inference. Samples and statistics versus population and parameters. Distributions of functions and random variables. Sampling from the normal distribution. The t and F distributions. Point estimation by the method of moments and maximum likelihood estimation. Methods of evaluating point estimators. Finding and evaluating hypothesis tests and confidence intervals. Brief introduction to method of moments and maximum likelihood. Tests and intervals for means, variances and proportions (one and two sample). Regression models. Examples drawn from engineering, science, computer science, and business. *Prerequisites:* STAT 3793 and one of STAT 2793, BA 2606, PSYC 3913, STAT 2593; or permission of the instructor.

STAT4803   **Topics in Statistics (O)**   **3 ch (3C)**

Selected topics at an advanced level. Content will vary. Topic of course will be entered on student's transcript. Course will be considered as an upper level elective for Information Sciences students and for Mathematics and Statistics Majors. *Prerequisite:* STAT 4793 or consent of instructor.

STAT4993   **Project in Statistics**   **3 ch [W]**

Research project in Statistics carried out by the student under the supervision of a member of the Department. The student will submit a

written report and make an oral presentation. *Prerequisite:* Normally 75% of total credits required in the program.

UNIV

UNIV1003   **Everything I Need to Know in First Year**   **3 ch (3C)**

UNIV 1003 is a one term-course, open only to first-year students, which provides an introduction to the nature of university education. The course is designed to help new students better understand the learning process and acquire essential academic skills including research and writing skills. The course will support students as they examine challenges common in the university setting.

UNIV1005   **Service Learning Mentoring**   **3 ch**

UNIV 1005 includes combined class and service learning components that place the enrolled student in a mentoring position with students in a local school. Enrolled students will learn about the social, economic and political challenges facing residents in one of the city's priority neighbourhoods and what role education can play in alleviating these challenges. In doinig so, students will develop a better sense of their role as community citizens as well as a better understanding of their own learning skills through their mentorship of younger students.

WORLD LITERATURE

WLIT2503   **Introduction to Comparative Literature**   **3 ch [W]**

This course is an introduction to the discipline of Comparative Literature. Students will read representative works in a variety of genres from different cultures and historical periods.

WLIT2504   **Special Topics in World Literature**   **3 ch (3C) [W]**

This course focuses on specialized areas of interest in or specific authors of English and/or world literature.

WLIT2505   **Fairy Tale Adaptation(s)**   **3 ch (3C) [W]**

This course will consider fairy tales of the Grimms, Anderson, D'Aulnoy, Straparola, Basile, Perrault, Atwood, Carter, Maas, Sexton as well as modern retellings in fiction, film and TV series.

WLIT3314   **European Romanticism**   **3 ch (3C) [W]**

A study of the literature, art, and music of the period 1770-1850 in Europe. Major themes may include individualism, Romantic heroism, revolution, folklore, childhood and nature.

WLIT3315   **Nineteenth-Century Literature**   **3 ch (3C) [W]**

The development of Western literature, philosophy, and aesthetics during the second half of the nineteenth century, in the context of literary, philosophical, aesthetic, and social movements. Authors studied may include: Baudelaire, Sand, Mallarmé, Rachilde, Marx, Tolstoy, Nietzsche, Ibsen, Dostoevsky, Strindberg, Freud.

WLIT3725   **Literature and/as Philosophy**   **3 ch (3C) [W]**

Through the study of specific authors, this course will be an examination of the manner in which these two humanities disciplines interact, enhance and mutually inform dialectical, analytic, and imaginative forms of thought. Authors and their texts may include de Beauvoir, Camus, Dostoevsky, Kundera, de Sade, Sartre, Tolstoy, Wollstonecraft.

WLIT3901   **Studies in Comparative Literature**   **3 ch (3S) [W]**

An upper level seminar on a specified topic. Please consult the discipline.

BACHELOR OF ARTS

FACULTY OF ARTS

General Office:	Tilley Hall, Room 26
Mailing Address:	Faculty of Arts University of New Brunswick P.O. Box 4400, Fredericton N.B., Canada, E3B 5A3
Phone:	(506) 453-4655
Email:	arts@unb.ca
Website:	http://www.unb.ca/fredericton/arts/
Dean:	Joanne H. Wright, BSc, MA, PhD
Associate Dean:	Carmen Poulin, BA, MA, PhD
Associate Dean:	
Coordinator, Arts Advising:	Linda McNutt, BA, MA, PhD

General Information

The Bachelor of Arts (BA) degree at UNB Fredericton may be earned for study in humanities, languages, sciences, social sciences, or interdisciplinary programs. Within the different branches of knowledge, a collection of some thirty different disciplines at UNB (Fredericton campus) offers students an opportunity for the learning experience of their choice, in preparation for their personal academic goals, which may include:

- entry into advanced professional programs (such as architecture, business, education, journalism, law, divinity, social work, etc.);
- employment in the broad and growing number of career fields which require the skills developed in an Arts degree–the ability to critically analyze a text, to research a topic, to communicate orally and in writing, to work independently or on a team, to apply general principles to a specific problem, to demonstrate flexibility, to adapt to and grow in new situations, and to take initiative;
- admission into graduate training and research in their chosen discipline.

The structure of the four-year Bachelor of Arts program encourages Arts students to gain a basic understanding of a variety of academic disciplines as they begin their studies, and then to focus on one or two of those disciplines as they complete the degree requirements. Years 1 and 2 lay a foundation by broadening students' perspectives on the many different ways we have of understanding the world and by strengthening the thinking and communication skills necessary for the students' success in university and beyond. Years 3 and 4 build on that broad foundation by further developing the students' understanding of the approaches, methodologies, and subject matter of the discipline(s) chosen by the students to be their central area(s) of interest–their "Major(s)." An even more intensive specialization is possible for students who maintain high grades, if they chose to complete their degree "with Honours." Students may also choose to complement their Major or Honours subject(s) with a Minor in another discipline.

The BA program may also be combined with complementary fields in other degree programs:

- **BAA (Bachelor of Applied Arts (Craft and Design))–** a four-year articulated degree program (offered in co-operation with the New Brunswick College of Craft and Design) offering a unique combination of the traditional strengths of liberal arts education with practical experience in studio art courses;
- **BAS (Bachelor of Arts and Science)** – a four-year joint degree program (offered in co-operation with the Faculty of Science) which offers a chance to gain broader experience of academic work in both faculties;
- **BA/BCS (Bachelor of Arts/Bachelor of Computer Science)** – a five-year concurrent degree program (offered in co-operation with the Faculty of Computer Science) which leads to both a BA and a BCS; it combines in-depth scientific training with the development of sophisticated analytical, communication, and critical skills;
- **BA/BSc (Bachelor of Arts/Bachelor of Science)** – a five-year concurrent degree program (offered in co-operation with the Faculty of Science) which leads to both a BA and a BSc; it provides an academic framework for students who have a strong interest in one of the Science disciplines and in one of the Arts disciplines and want to work in both.

THE PROGRAMS AND COURSES AVAILABLE IN THE FACULTY OF ARTS

"H"=Honours Programs; "M"=Major Programs; "m"= Minor Programs; "Ce"=Certificate Program; "Co"=Courses

Subject	H	M	m	Ce	Co	For information, see
Ancient Philosophy			X		X	Classics & Ancient History/Philosophy
Anthropology	X	X	X		X	Anthropology
Biology	X*	X*	X		X	Biology
Chemistry	X*	X*	X		X	Chemistry

Subject	H	M	m	Ce	Co	For information, see
Chinese					X	Culture & Media Studies
Classical Studies	X	X	X		X	Classics & Ancient History
Classics	X	X	X		X	Classics & Ancient History
Comparative Cultural Studies	X	X	X		X	Culture and Media Studies
Creative Writing (ENGL)	X	X	X		X	English
Criminology and Criminal Justice	X	X	X		X	Sociology
Drama (DRAM)		X**	X		X	English
Earth Sciences	X*	X*	X		X	Earth Sciences
Economics	X	X	X		X	Economics
Economic Studies		X			X	Economics
English	X	X	X		X	English
Ethics			X	X	X	Philosophy
Family Violence Issues				X	X	Muriel McQueen Ferguson Centre
Film Production (MAAC)	X	X		X	X	Culture & Language Studies
Film Studies			X		X	Culture & Language Studies/English
French	X	X	X	X	X	French
Gender and Women's Studies	X**	X**	X		X	Arts
Greek (Ancient)					X	Classics & Ancient History
Greek (Modern)					X	Classics & Ancient History
History	X	X	X		X	History
History of Philosophy			X		X	Philosophy
International Development Studies	X**	X**	X		X	Political Science
Japanese					X	Culture & Language Studies
Latin					X	Classics & Ancient History
Law in Society	X**	X**	X		X	Sociology
Mathematics	X*	X*	X		X	Mathematics & Statistics
Media Arts & Cultures	X	X	X		X	Culture & Media Studies
Music Studies			X		X	Culture & Media Studies
Neuroscience (PSYC)	X	X	X		X	Psychology
Philosophy	X	X	X		X	Philosophy
Physics	X*	X*	X		X	Physics
Political Science	X	X	X		X	Political Science
Psychology	X	X	X	X	X	Psychology
Public Policy			X		X	Economics/Political Science
Publishing				X	X	English/History
Sociology	X	X	X		X	Sociology
Statistics	X*	X*	X		X	Mathematics & Statistics

*Indicates a BA specializing in one of the Science disciplines. Interested students should direct their inquiries to the Department concerned.

**Indicates subjects which are available only as part of a Joint Honours or Double Major program.

General Regulations

I. This section outlines what students need to do to complete a BA degree at UNB on the Fredericton campus; all students are encouraged to review carefully the regulations in this section, to seek assistance regularly from Faculty and Department advisors, and to take overall responsibility for their own progress through the degree program. While UNB makes every

effort to ensure that academic advice is available to all students, it remains the students' responsibility to seek such advice and to ensure they fully understand what is required of them. (Any matter not addressed by the General Regulations of the Arts Faculty will be governed by the General University Regulations in Section B of this Calendar. Questions concerning the application of regulations should be directed in writing to the Associate Dean of Arts.)

II. The BA degree requires the successful completion of both (a) the general Arts Faculty requirements and (b) the specific requirements of an Honours/Major program. The general Arts Faculty requirements include

- the first-year and second-year distribution requirements (see below under First-Year Regulations and Second-Year Regulations);
- the successful completion of at least 51 credit hours (ch), and normally 60 ch, of upper level courses (3000 or higher); and
- the successful completion overall of at least 120 ch of approved courses with a Cumulative Grade Point Average (CGPA) of 2.0 (C) or higher.

The specific Honours/Majors requirements are described by Department or Program in the Programs of Study section, below.

III. Students should note the following additional regulations:

1. In the Faculty of Arts, almost all courses are given a weighting of 3 ch per term, so that a one term-course normally counts for 3 ch, and a full-year course for 6 ch. Courses taken outside the Faculty of Arts with a weighting of 3-5 ch (one term) receive a value of 3 ch towards the BA degree; those with a weighting of 6-8 ch (full-year) receive a value of 6 ch toward the BA degree. Courses taken outside the Faculty of Arts with a weighting of 1 or 2 ch do not count toward the BA.
2. The regular academic year, from September to April, is made up of two terms: Fall and Winter. The typical course load for a student is 15 ch (or five 3 ch courses) each term. A student may register for up to 18 ch each term and normally must register for at least 9 ch each term to be considered full-time (for tuition purposes).
3. As far as possible, requirements should be completed in sequence: first-year distribution requirements; then second-year distribution requirements; then upper-year courses to complete Major(s) or Honours requirements.
4. With the exception of laboratory courses and field schools, any appropriate courses completed successfully in the Faculties of Science or Computer Science may be counted toward a BA degree. In addition, if a student completes the requirements for a Minor in Business (24 ch), the full Minor will count towards the BA; otherwise, no more than 12 ch of courses in Faculties other than Arts, Science, and Computer Science may be counted toward the completion of the BA.
5. Only students completing a BA degree may earn a Major or Honours designation in an Arts discipline, with the following exceptions: students may complete a BBA in Economics or in Law in Society; students may complete a BSc in Economics or in Psychology.
6. Students who have successfully completed the First Year (30 ch) of the BA program on the Saint John campus of UNB shall have their full First Year accepted as equivalent to that offered in Fredericton.
7. To complete the BA degree, students transferring from another university should note that at least 60 ch of the total credit hours, at least 30 ch of the upper level courses, and at least half of the courses counting towards their Majors, Honours, and/or Minor, must be taken at UNB.

FIRST-YEAR REGULATIONS (1-30 Credit Hours)

The first year is designed to offer a strong, broad-based core of knowledge and skills from various Arts disciplines and to provide a foundation for the remainder of the degree program. To fulfill the Faculty's distribution requirements, students should choose their first-year courses (the first 30 ch) as follows:

1. 6 ch - ARTS 1001 and ARTS 1002.
2. 18 ch - Six credit hours in each of three different disciplines. Three of the four groups of disciplines (A, B, C, D) listed below must be represented.
3. 6 ch - The remaining six credit hours may be taken in one discipline from any of Groups A, B, C, or D, or taken as three credit hours in each of two disciplines, including Drama, Gender and Women's Studies, International Development Studies, and Music. ARTS 1003 may be taken instead of one of the disciplinary courses. First-year students may take no more than 6 ch in any one discipline, except if they take ARTS 1001, ARTS 1002, and ARTS 1003.

A (Languages)[1]	B (Humanities)	C (Social Sciences)	D (Sciences)[2]
Chinese	Classics	Anthropology	Astronomy
French	English	Economics	Biology
German	History	Political Science	Chemistry
Greek (Ancient)	Media Arts & Cultures	Psychology	Computer Science

Greek (Modern)	Philosophy	Sociology	Earth Sciences
Japanese	Comparative Cultural Studies		Mathematics
Latin			Physics
Russian			Statistics
Spanish			

NOTES:

1. Other languages such as Arabic, Wolastoqey, and Mi'kmaq (when available) may be taken to satisfy the requirements of Group A.
2. Laboratory courses taken in other Faculties will not be counted in the credit hour total but will be counted in the calculation of the Grade Point Average (GPA) for the BA program.

PLEASE NOTE: ARTS 1001 was first taught in Fall 2020, and ARTS 1002 was first taught in Winter 2021. Students who previously took ARTS 1000 or ARTS 1100 to meet their first-year BA requirements will still have those courses counted towards their program in lieu of ARTS 1001 and ARTS 1002. Students who completed ARTS 1000 or ARTS 1100 cannot receive credit for either ARTS 1001 or ARTS 1002.

FIRST-YEAR REGULATIONS PRIOR TO 2020-2021 (for information; this applies to students who began the BA program prior to Fall 2020 and completed ARTS 1000 or ARTS 1100.

Prior to 2020-2021, there were two options for completing the first-year BA requirements:

1. 6 ch - ARTS 1000.
2. 18 ch - Six credit hours in each of three different disciplines. Three of the four groups of disciplines (A, B, C, D) listed below must be represented.
3. 6 ch - The remaining six credit hours may be taken in one discipline from any of Groups A, B, C, or D, or taken as three credit hours in each of two disciplines, including Drama, Gender and Women's Studies, IDS, and Music. In either case, the discipline(s) should be different from the three taken under regulation 2, above, since first-year students may take no more than 6 ch in any one discipline.

OR

1. 9 ch - ARTS 1100
2. 18 ch - Six credit hours in each of three different disciplines. Three of the four groups of disciplines (A, B, C, D) listed below must be represented.
3. 3 ch - The remaining three credit hours may be taken in one discipline from any of Groups A, B, C, or D, including Drama, Gender and Women's Studies, IDS and Music. The discipline should be different from any of the three taken under regulation 2, above, since first-year students may take no more than 6 ch in any one discipline.

SECOND YEAR REGULATIONS (31-60 Credit Hours)

Students may choose their second-year courses from the disciplines listed under the First-Year regulations, as well as from Drama, Film, Music, International Development Studies, Law in Society, and Gender and Women's Studies. To fulfill the Faculty's distribution requirements, students should choose their courses as follows:

1. 18 ch - Six credit hours in each of three disciplines
2. 12 ch - At least three credit hours in a fourth discipline; the remaining credit hours may be elective courses in any discipline, as long as no more than 12 ch of the 30 ch total are taken in any single discipline.

During the Winter term of their second year, students must consult with the academic advisor(s) in the discipline(s) in which they intend to complete a Major or Honours program in their final two years, in order to declare a Major or apply for Honours, and to have their proposed course selection approved.

THIRD AND FOURTH-YEAR REGULATIONS (61-120 Credit Hours)
General Information

1. **Choice of Major/Honours program:** Normally, students declare their Major, or apply for admission to Honours, in the discipline(s) of their choice with the Department(s) or Interdisciplinary Program(s) involved by end of the Second year, although students who have decided on a major are encouraged to declare their major by the end of their First year. (Students who wish to specialize in two subjects may declare a Double Major or apply for Joint Honours.) The Honours program is designed for students with a high level of ability who wish to undertake intensive study of one or two subjects, especially in preparation for graduate work.
2. **Upper level courses:** Normally, all courses taken to fulfill the last 60 ch of the BA degree will be upper level courses (i.e., with 3, 4, or 5 as the first digit of the course number). In consultation with their academic advisor(s), students may choose to include up to 9 ch of 1000-level or 2000-level courses in the final 60 ch of their degree program.
3. **Approval of courses:** All the courses in which a student enrols must be selected in consultation with the academic advisor(s) in the Department(s) or Interdisciplinary Program(s) in which the student is

majoring or honouring. The final selection of courses that will count toward the completion of the BA degree must be approved by the Dean.

4. **Minors:** Students may take a Minor in an Arts discipline in which they are not majoring or honouring, or in Business, Computer Science, or a Science discipline. A Minor comprises 24 ch, with at least 12 ch at the upper level.

BA Majors Program

1. A student may earn a Single Major by successfully completing at least 30 ch in that subject, 24 of which must be in upper level courses. Departments may require Single Major students to take up to 42 ch in upper level courses. A student may earn a Double Major by successfully completing at least 30 ch in each of the two subjects, a minimum of 18 ch of which must be at the upper level in each discipline. Departments may require students to take up to 30 ch of upper level courses.

2. A student will normally declare his or her intention to complete a Major or Double Major before beginning the final 60 ch, and preferably during the Winter term of the second year, by meeting with the academic advisor(s) in the relevant Department(s) (and, if applicable, the relevant Interdisciplinary Program).

3. Students may major in Gender and Women's Studies, Law in Society, or International Development Studies only as part of a Double Major.

4. Most Departments and Interdisciplinary Programs require a grade of C or above in all courses that count towards Major or Honours requirements.

5. Candidates for the degree of BA (Major) are listed at graduation in three divisions based on the CGPA of all courses taken. See Section B of this Calendar, "Listing of Graduates." A student who attains a Grade Point Average equal to or greater than 3.75 over credit hours 61-120 and no grades below C over the last 90 ch shall be awarded a Distinction upon graduation.

BA Honours Program

1. Single Honours students are required to complete at least 36 ch in upper level courses in the Honours subject. Individual Departments may require up to 48 ch in upper level courses.

   Joint Honours students must complete at least 18 ch in upper level courses from each Department. Departments may require up to 30 upper level ch.

2. In most subjects, Honours may be taken singly or jointly with Honours in another subject. These subjects are: Anthropology, Biology, Chemistry, Classical Studies, Classics, Earth Sciences, Economics, English, French, History, Mathematics, Media Arts & Cultures, Philosophy, Physics, Political Science, Psychology, Sociology, Statistics, Comparative Cultural Studies. Honours in International Development Studies, Law in Society, and Gender and Women's Studies must be taken jointly with Honours in one of the above disciplines.

3. Students seeking admission to a Single Honours or Joint Honours program are strongly encouraged to seek advising about Honours program requirements before beginning the final 60 ch, and preferably during the Winter term of the second year, by meeting with the academic advisor(s) in the relevant Department(s). For a Joint Honours program, a single admission will be made by the Departments (or, if applicable, the Department and the Interdisciplinary Program) acting in collaboration. Only under exceptional circumstances will Fourth-Year students be permitted to enter an Honours program.

   The basic requirement for admission to Honours is that the student shall have demonstrated a high level of ability in previous work in the subject(s) in which Honours is proposed.

4. Single Honours students who successfully complete the requirements for a Double Major in a second discipline may, if they choose, declare that Double Major. Upon graduation, their transcript will record that they have fulfilled the requirements for a Major in that subject.

5. A first-class Honours degree requires a GPA of 3.6 in the courses of the Honours subject or subjects, excluding lower level courses. For an Honours degree an average of 3.0 is required in these courses. Averages in the Honours subject(s) are calculated on the basis of the minimum number of credit hours required by individual Departments or Interdisciplinary Programs; credit hours successfully completed above this minimum are treated as "non-required" courses. Students are required to sustain a GPA of 2.5 in "non-required" courses taken for credit hours 31-120. Courses which Honours students are obliged to take must be counted as part of the minimum number of credit hours for the purpose of calculating the GPA in the Honours courses.
The recommendation to award an Honours degree will be made to the Dean of Arts by the Department(s) concerned. In the case of Joint

Honours, the standing is determined by the overall average in the courses required to fulfill the minimum requirements in both programs, and is subject to the agreement of both Departments (or of the Department and the Interdisciplinary Program) concerned.

Regulations for Granting a Second UNB Bachelor of Arts Degree

BA graduates of UNB may apply for admission to and follow a program towards a second BA degree under the following regulations:

- The general regulations of the University must be satisfied.
- The regulations of the Degree program and Departmental regulations concerning Major or Honours must be satisfied.

Normally, the minimum number of credit hours to be successfully completed beyond the work required for the previous degree will not be less than the normal load of the final academic year in the degree program concerned (typically, 30 ch). More than the minimum number of credit hours may be required.

The courses taken must be approved by the Dean and the Department(s) (or the Department and the Interdisciplinary Program) offering the Major or Honours program.

The general regulation that at least half the credit hours for a degree must be taken at UNB still applies.

Candidates for a second undergraduate degree may not choose a Major or Honours in the same discipline as in the first undergraduate degree, whether the first degree involved a Single or Double Major or Single or Joint Honours. Candidates may not choose a Major or Honours in a discipline in which they previously completed a Minor.

Students must apply to the Associate Registrar (Admissions) for entry to the second degree program.

Only under special circumstances will students be admitted to a third undergraduate degree program.

After completing a first degree, students may be permitted to upgrade a Minor to a Major or Honours, or to upgrade a Major to Honours, but in either case a notation only will be included on the student record and a second degree will not be awarded.

Students seeking to complete an Honours degree or obtain an Honours notation after completing a first degree should seek advising about requirements for admission to the Honours program. Admission to a second degree does not guarantee admission to the Honours program.

PROGRAMS OF STUDY

ANTHROPOLOGY

DEPARTMENT OF ANTHROPOLOGY

General Office:	Annex C, Room 28,
Mailing Address:	Department of Anthropology University of New Brunswick P.O. Box 4400 13 McAulay Lane, Room 28 Fredericton, New Brunswick, E3B 5A3
Phone:	(506) 453-4975
Email:	Judy Babin, Administrative Assistant judy.babin@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/anthropology/
Chair:	Dr. Amy Scott

FACULTY

- Blair, Susan E., BA (McM), MA (UNB), PhD (Toronto), Prof - 2006
- Hrynick, M. Gabriel, BA (Maine), MA (UNB), PhD (Conn), Associate Prof - 2016
- Mitra, Koumari, BSc, MSc, PhD (Delhi), Prof - 2000
- Pleshet, Noah, PhD (NYU), Assistant Prof - 2021
- Scott, Amy, BA (Trent), MA (Western), PhD (Manitoba), Associate Prof & Chair - 2016
- Tubb, Daniel, BA (Trent), MA, PhD (Carleton), Asst Prof - 2016
- Wiber, Melanie, BA (Leth), MA, PhD (Alta), Prof - 1987

ADJUNCT

- Betsinger, Tracey, Adj. Prof - 2020
- Ebert, David, BA, MSc, PhD (University of Manitoba), Adj. Prof - 2017
- Newson, Bonnie, Adj. Prof - 2021
- Patton, Katherine, Adj. Prof - 2021
- Sax, Marieka, Adj. Prof - 2019
- Wood, Summer, Adj. Prof - 2021

HONORARY RESEARCH PROFESSOR

- Black, David, BA (Simor Fraser), MA, PhD (McMaster), Honorary Research Professor - 2016

HONORARY RESEARCH ASSOCIATE

- Anderson, Arthur, Honorary Research Associate - 2018

- Dignam, Darcy, Honorary Research Associate - 2013
- Moran, Mallory, Honorary Research Associate - 2019
- Parlee, Courtney, Honorary Research Associate - 2017
- Recchia, Maria, Honorary Research Associate - 2013

General Information

Anthropology is the global study of the human condition, including biological and cultural similarities and differences in the past and the present. The Department of Anthropology offers comprehensive programs in three sub-fields:

- sociocultural anthropology is the study of contemporary and recent cultures around the world;
- archaeology is the study of human cultures through material remains;
- biological anthropology is the study of human biological diversity in the framework of human evolution;

Courses in Area Ethnographies

ANTH 3662 through ANTH 3704 are intended to provide a general knowledge of the societies and cultures of selected geographical regions. These courses are designed for non-Majors as well as for Anthropology Majors and Honours students. **NOTE** that there are no *Prerequisites* for these courses.

Prerequisites

To graduate in Anthropology, students must complete at least two first level courses. Upper level courses frequently require specific first and second level courses as *Prerequisites*. Students should take note of these requirements when planning their studies.

Minors, Majors and Honours Programs

Minor

To Minor in Anthropology, a student must successfully complete both ANTH 1001 and ANTH 1002 (or equivalent) and at least 18 ch of upper level Anthropology courses, with a grade of 2.0 (C) or better in each course.

Single Major and Double Major

For a single Major in Anthropology, or to complete the Anthropology component of a Double Major with another discipline, a student must successfully complete both ANTH 1001 and ANTH 1002 (or equivalent) and at least 24 ch of upper level Anthropology courses, with a grade of C (2.0) or better in each course.

Honours

Students wishing to be admitted to Honours should review the regulations concerning the BA Honours Program in this Calendar and apply in writing to the Department of Anthropology's Honours and Majors Advisor.

Single Honours

To earn an Honours degree in Anthropology, a student must successfully complete both ANTH 1001 and ANTH 1002, (or equivalent) and at least 36 ch of upper level Anthropology courses. Upper level courses must include ANTH 5001. To remain in an Honours program a student must maintain a grade point average of at least 3.0 (B) in Anthropology courses and approved substitutes, with no grade lower than B- (2.7) in a required-level course.

Joint Honours

To graduate with Joint Honours in Anthropology and another discipline, a student must successfully complete both ANTH 1001 and ANTH 1002 (or equivalent) and at least 24 ch of upper level Anthropology courses. Upper level courses must include ANTH 5001. To remain in the Honours program, a student must maintain a grade point average of at least 3.0 (B) in Anthropology courses and approved substitutes, with no grade lower than B- (2.7) in a required upper level course.

ARCHAEOLOGY

NOTE: ADMISSION TO THE ARCHAEOLOGY PROGRAM AND ALL RELATED MINORS HAS BEEN SUSPENDED EFFECTIVE SEPTEMBER 1, 2018. FOR FURTHER INFORMATION PLEASE CONTACT THE DEAN OF ARTS.

This Inter-Departmental program has been terminated, however, students can still obtain courses/credit in both Anthropology and Classics and Ancient History.

ARCHAEOLOGY INTERDEPARTMENTAL PROGRAM

FACULTY

- Susan Blair - Department of Anthropology - sblair@unb.ca
- Gabriel Hyrnick - Department of Anthropology - gabriel.hyrnick@unb.ca
- Matthew Sears - Department of Classics & Ancient History - matthew.sears@unb.ca
- Maria Papaioannou - Department of Classics & Ancient History - mariap@unb.ca

Archaeology Program Advisor

- Maria Papaioannou - Department of Classics and Ancient History - mariap@unb.ca

The Archaeology Interdepartmental Program offers a comprehensive, four-year curriculum covering anthropological archaeology, classical archaeology and related subjects. The core of the program is offered through the departments of Anthropology and Classics & Ancient History. Students have a choice of Minor, Major, Double Major, Honours or Joint Honours study, with emphasis in either an Anthropological Archaeology stream or a Classical Archaeology stream. The first two years of the program are comprised of required courses, which provide foundational overviews of the discipline of Archaeology. While the upper level program structure allows students to specialize in one of the two streams (Anthropological or Classical archaeology), students are required to take upper level courses from both streams.

Minors, Majors and Honours Program

MINOR PROGAM IN ARCHAEOLOGY

The Minor in Archaeology consists of 24 ch of courses, forming a coherent sequence, distributed as follows:

- 6 ch of 1000-level archaeology;
- 6 ch of 2000-level archaeology;
- 12 ch of 3000-level archaeology.

Students must achieve a grade of C or better in each individual course.

MAJOR AND HONOURS PROGRAMS IN ARCHAEOLOGY

Lower Level Requirements:

1000- Level Requirements: ARCH (ANTH) 1303 and ARCH (CLAS) 1323
2000- Level Requirements: ARCH (ANTH) 2303 and ARCH (CLAS) 2333

Upper Level Requirements:

Major: Students typically enter the Major program prior to beginning the final 60 ch of undergraduate study, preferably during the Winter term of the second year, and after consultation with the Archaeology Program Advisor. The Major in Archaeology consists of 24 ch of upper level courses, distributed as follows:

- 15 ch in the student's chosen Archaeology stream;
- 9 ch in the other Archaeology stream;

Students must achieve a grade of C or better in each individual course.

Double Major: Students may undertake Double Major study in Archaeology and another discipline; Archaeology requirements are the same as for a Major.

Honours: Students seeking admission to the Honours program are strongly encouraged to apply before completing the first 60 ch of undergraduate study, preferably during the Winter term of the second year, by meeting with the Archaeology Program Advisor. To be eligible for admission to the Honours program, students must have:

- completed 60 ch of undergraduate study with a cumulative GPA 2.5 or higher;
- completed at least 12 ch of Archaeology course work with a cumulative GPA of 3.0 or higher in Archaeology courses.

For admission to Honours, students must apply in writing to the Archaeology Program Advisor.

The Honours program in Archaeology consists of 36 ch of upper level courses, distributed as follows:

- 24 ch in the student's chosen Archaeology stream;
- 12 ch in the other Archaeology stream;
- the above must include ANTH 5303 and CLAS 5013;
- at least 3 ch of the above must be a recognized course involving archaeological field research, or an acceptable equivalent; †
- in addition to the upper level requirements listed above, students must complete at least 3 ch of a science, an applied science, computing, statistics, or a technical subject relevant to archaeological practice. ‡

Students must achieve a grade of B- or better in each individual course.

Joint Honours: Students may undertake Joint Honours study in Archaeology and another discipline. The Archaeology requirements for Joint Honours include 27 ch of upper level courses, as distributed as follows:

- 18 ch in the student's chosen Archaeology stream;
- 9 ch in the other Archaeology stream;
- the above must include either ANTH 5303 and CLAS 5013;
- at least 3 ch of the above must be a recognized course involving archaeological field research, or an acceptable equivalent.†

Students must achieve a grade of B- or better in each individual course.

†This requirement may be satisfied through completing a field school program offered by Anthropology or by Classics & Ancient History, or through field schools offered by other universities or research institutions, or through field experience gained in a non-university setting, such as employment on government-sponsored or private-sector cultural resource management-based archaeological projects. Students should consult the Archaeology Program Advisor in advance with regard to fulfilling this requirement.

‡Examples of UNB courses that fulfill this requirement: introductory biology, geology, chemistry or physics courses; introductory computer science; STAT 2043; MATH 1003; PSYC 2113; ANTH 3052; BIOL 4352; GGE 1001, 2423; FNAT 2703. Students should consult the Archaeology Program Advisor with regard to fulfilling this requirement.

CLASSICS AND ANCIENT HISTORY

DEPARTMENT OF CLASSICS AND ANCIENT HISTORY

General Office:	Carleton Hall, Room 209
Mailing Address:	Department of Classics and Ancient History University of New Brunswick P.O. Box 4400, Fredericton, New Brunswick, Canada E3B 5A3
Phone:	(506) 453-4763
Fax:	(506) 447-3072
Email:	classics@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ classics/index.html

Chair: Dr. Robert Larmer

FACULTY

- Kerr, William G., BA (Tor), BA (Oxon), MA, PhD (Prin), Assoc Prof - 1987
- MacDonald, Carolyn, BA (King's/Dal), MA (Dal), PhD (Stanford), Assist Prof - 2016
- Papaioannou, Maria, BA (Thessalonike), MA, PhD (UBC), Assoc Prof - 2005
- Sears, Matthew A., BA (UNB), PhD (Cornell), Assoc Prof - 2013

General Information
"Classics"

- is the study of the ancient civilizations of Greece and Rome through their literary and material remains
- embraces the distant pre-history of these civilizations as well as their continuing influence on modern society
- offers a multicultural, interdisciplinary approach to the classical world through the study of languages, history, literature, mythology, religion, archaeology, art, and philosophy

Courses Offered

- Latin [LAT]: students are taught [in English] to read and write Classical Latin. Students without previous experience in this language begin the study of Latin with LAT 1103.
- Greek [GRK]: students are taught [in English] to read and write ancient Greek. Students without previous experience in this language begin the study of Greek with GRK 1203.
- Modern Greek [GRKM]: through the auspices of the Centre for Hellenic Studies at UNBF, students are taught [in English] to read, write, and speak Modern Greek. Students without previous experience in this language begin the study of Modern Greek with GRKM 1003.
- Classics [CLAS]: students study the political, social, and cultural life of the Greeks and Romans through lectures, visual illustrations, and assigned readings in English translation. Students begin with the study of the Classical Civilizations in any introductory course (CLAS 1323, 1403, 1413, or 1503)

Credit in History

Selected advanced CLAS courses may be counted for credit in programs in the Department of History, up to a maximum of 12 ch. Consult the History section of the calendar for a list of these courses.

Credit in Anthropology

Students interested in Classical Archaeology might also wish to take Archaeology courses from the Department of Anthropology. With permission of the Classics Undergraduate Advisor, advanced ANTH courses in Archaeology may be counted for credit in programs in the Department of Classics and Ancient History, up to a maximum of 12 ch. Likewise, selected advanced CLAS Archaeology courses may be counted for credit in programs in the Department of Anthropology, up to a maximum of 12 ch. Consult the ANTH section of the calendar for relevant regulations. A Double Major or Joint Honours in Anthropology and Classics/Classical Studies is possible.

Programs of Study

Students should be aware of the difference between the two program options offered by the Department, as well as the options for a focus on Classical Archaeology.

Classics

Classics is the study of the ancient Mediterranean world through literary and material remains. Of central importance to the study of Greece and Rome is a knowledge of the works of ancient authors such as Homer and Herodotus, Vergil and Cicero in their original languages. The program in Classics emphasizes the study of ancient Greek and Latin language. Students wishing to pursue the study of Classics at the highest level, including in Graduate School, or even to experience the ancient world in the original languages, are advised to begin their study of Greek and Latin as early as possible in their degree program. Students also have the opportunity to participate in a Travel Study Program to Greece or Rome and in summer archaeology field-schools in the Mediterranean.

Classical Studies

The study of the classical cultures of Greece and Rome may also be undertaken as a more general exploration of the rich heritage of modern western culture. Therefore, students with a keen interest in Greece and Rome who do not intend to pursue graduate study of these ancient cultures are directed to the program of Classical Studies. This program may lead to professional training in law or journalism or education, etc., or serves as a valuable complement to a primary academic discipline (such as History, English, Sociology, or Political Science).

Honours, Majors and Minors

NOTE: The Department of Classics and Ancient History requires a grade of C or above in all courses that count towards Major or Honours requirements.

Honours

Students normally apply for admission to an honours program in Classics or Classical Studies during their second year, pending their successful completion of 60 ch of university study with a CGPA of at least 2.5. Admission to the Honours programs normally requires the completion of at least 12 ch of courses taught in the Department of Classics and Ancient History, including at least 6 ch of a Classical language for those students choosing the CLASSICS option.

Honours in Classics

An Honours in Classics required 57 ch, distributed as follows.

- 6 ch of lower level CLAS
- 12 ch LAT 1103/1113 and GRK 1203/1213
- 12 ch LAT 2305/3105 and GRO 2205/3205
- 3 ch more LAT or GRK
- 24 ch upper level CLAS or LAT or GRK (including at least 3 ch from EACH of the three course categories, and CLAS 4403 [or equivalent]

A joint Honours in Classisc and another discipline required 48 ch, distributed as follows:

- 6 ch lower level CLAS
- 12 ch LAT 1103/1113 and GRK 1203/1213
- 12 ch LAT 2105/3105 and GRK 2205/3205
- 18 ch upper level CLAS or LAT or GRK

Honours in Classical Studies

An Honours in Classical Studies required 54 ch, distributed as follows:

- 6 ch of lower level CLAS
- 6 ch LAT 1103/1113 OR GRK 1203/1213
- 42 ch of upper-level CLAS or LAT or GRK (including at least 3 ch from EACH of the three course categories, and CLAS 4403 [or equivalent]) (LAT/GRK courses at 2000-level may count toward the upper level requirements)

A Joint Honours in Classical Studies requires 42 ch, distributed as follows:

- No ancient language requirements
- 6 ch of lower level CLAS or LAT or GRK
- 36 ch upper level CLAS or LAT or GRK (LAT/GRK courses can be at 2000 level)

Majors

Students wishing to Major in Classics or Classical Studies normally declare their major during their second year after they have seen their Department advisor.

Major in Classics

A major in Classics requires 51 ch, distributed as follows:

- 6 ch of lower level CLAS
- 12 ch of LAT1103/1113 and GRK 1203/1213
- 6 ch of LAT 2105/3105 or GRK 2205/3205
- 27 ch upper level CLAS or LAT or GRK (including at least 3 ch from EACH of the three course categories)

A Double Major in Classics and another discipline requires 45 ch, distributed as follows:

- 6 ch in lower level CLAS
- 12 ch LAT 1103/1113 and GRK 1203/1213
- 6 ch LAT 2105/3105 or GRK 2205/3305
- 21 ch upper level CLAS or LAT or GRK

Major in Classical Studies

A Major in Classical Studies requires 42 ch, distributed as follows:

- 6 ch of lower level CLAS or LAT or GRK
- 30 ch upper level CLAS or LAT or GRK (including at least 3 ch from EACH of the three course categories) (LAT/GRK courses at 2000-level may count toward the upper level requirements)
- 6 ch of additional CLAS or LAT or GRK at any level

A Double Major in Classical Studies and other discipline requires 36 ch, distributed as follows:

- 6 ch of upper level CLAS or LAT or GRK
- 24 ch of upper level CLAS or LAT or GRK (LAT/GRK courses at 2000-level may count toward the upper level requirements)
- 6 ch of additional CLAS or LAT or GRK at any level

Minor

A Minor in Classics requires 24 ch, distributed as follows:

- 12 ch LAT and/or GRK
- 12 ch upper level CLAS or LAT or GRK (LAT/GRK courses at the 2000-level may count toward the upper level requirements)

A Minor in Classical Studies requires 24 ch, distributed as follows:

- 12 ch of upper level CLAS or LAT or GRK (LAT/GRK courses at the 2000-level may count toward the upper level requirements)
- 12 ch additional CLAS or LAT or GRK at any level.

A Minor in Ancient Philosophy consists of 24 ch of courses offered by the Department of Classics & Ancient History and the Department of Philosophy as follows:

- 6 ch of introductory Philsophy: PHIL 1101, PHIL 1301.
- 6 ch of ancient language: GRK 1203/GRK 1213 or LAT 1103/LAR 1113 or any other 6 ch of Greek and/or Latin.
- 6 ch of advanced Philsophy (PHIL) courses, including at least one of PHIL 3301, PHIL 3302, PHIL 3305, PHIL 3306, PHIL 3311.
- 6 ch of advanced Classics (CLAS) courses, including at least one of CLAS 3703, CLAS 3723, and CLAS 3733.

Course Categories

Ancient History	Classical Literature and Culture	Classical Archaeology
CLAS 3003 Greek History 3023 Alexander and the Hellenistic World 3033 Roman History 3053 Roman Army 3053 Greek Warfare 3073 Jewish Civilization 3083 Byzantine Empire 3093 Decline of Roman Empire 3463 History of Modern Greece 3813 Early Church 3923 Roman Law 4063 Augustus 5003 Directed Studies in Classics	CLAS 3402 Comic Theatre 3413 Tragic Theatre 3433 Ancient World on Film 3473 Modern Greek Literature 3483 'Surfing' the Agean 3503 Greek Gods & Cults 3513 Trojan War 3523 Roman Myth & Religion 3703 Socrates 3723 Ancient Science 3733 Ancient Philosophers 3813 Early Church 3913 Gender and Power 3933 Sport & Recreation in Greece and Rome 3943 Spectacle in Ancient Rome 3422 Ancient World on Film	3223 Art & Archaeology of Byzantium 3333 Art & Archaeology of Greece 3334 Classical Archaeology: Method and Theory 3343 Archaeologies of the Roman Empire 3373 Pompeii and Herculaneum 4303 Exploring Athens 4313 Exploring Rome 4333 Living in the Ancient World 4353 Greek Sculpture 4363 Roman Sculpture 5013 Topics in Classical Archaeology 3013 Field School in Classical Archaeology

UNB TERM IN ATHENS

The Department of Classics & Ancient History, in cooperation with other departments in the Faculty of Arts at UNBF, offers students an opportunity to spend a term in Athens studying UNB courses offered by UNB professors. Each student participant enrols in an integrated 15 ch program which combines classroom work in state-of-the-art teaching facilities with field trips, cultural experiences, extended travel to other areas of Greece, and a cruise visiting several Aegean islands. The program includes:

- **3 credit hours of language study:** GRKM 1003: Modern Greek I - An introduction to language skills which will enable students to gain a basic ability to speak read and write the language of modern Greece. [*Prerequisites:* none]
- **6 credit hours of classical archaeology and art history:** CLAS 3603: The Art and Architecture of Greece I - A survey of outstanding examples of the art and architecture of Greece at important archaeological sites and in major museums in Greece. [*Prerequisites:* successful completion of 30 ch of university courses]; CLAS 3605: Ancient Athens - A practical workshop introducing students to the ancient city's Greek and Roman remains which are found at archaeological sites and museums in and around Athens. [*Prerequisites:* successful completion of 30 ch of university courses]
- **6 credit hours in the discipline of the collaborating department:** The collaborating department will vary from year to year. Students are

encouraged to enquire concerning departmental plans in future years.

Courses will be conducted both in the classroom and "on-site", and will include standard UNB reading and writing assignments and final examinations. **NOTE** that travel costs are not included in the tuition for these courses.

COMPARATIVE CULTURAL STUDIES

General Information

The program in Comparative Cultural Studies is dedicated to the interdisciplinary study of cultures and cultural forms in a cross-cultural perspective. Students learn about culture(s) and arts across time and geographic origin, in a range of contexts and expressions, through practical and theoretical perspectives. Along with the study of a second language, students will pursue courses in a diverse range of disciplines including popular culture, cultural theory, literature, music, and film, all primarily from a cross-cultural perspective. It is through critical comparative analysis and study that we can truly begin to understand ourselves and our own traditions, identities, and realities alongside those of others. With an international and comparative focus, this program will allow students to view their world in new and exciting ways. We also encourage students to participate in travel study and exchange programs whenever possible.

Programs of Study

Honours, Majors, and Minors

Students interested in Comparative Cultural Studies have the following options:

- Honours in Comparative Cultural Studies
- Honours in Comparative Cultural Studies (German or Spanish option)
- Major in Comparative Cultural Studies
- Major in Comparative Cultural Studies (German or Spanish option)
- Minor in Comparative Cultural Studies

Honours programs are intended for students who are interested in a concentrated course of study.

The German and Spanish options are designed to allow students with an interest in one of these areas to concentrate their 12 ch of CCS elective courses and have this recognized on their transcript. All students electing the German or Spanish option still complete all of the core courses for the general Comparative Cultural Studies program.

The Minor, which consists of 24 ch of CCS courses, is for students majoring in other disciplines.

Joint Honours and Double Majors with Comparative Cultural Studies are also possible.

NOTE: Students may take up to 6 ch of their program electives outside the department with permission of the program director.

Honours Program

Admission to the Honours Program in Comparative Cultural Studies is open to qualified students who have completed 45 ch of courses toward the BA degree. Normally students will have completed (or be in process of completing) 12 ch in lower level CCS courses and 6 ch in a second language. Students should normally apply for admission to the Comparative Cultural Studies Honours Program in their fourth term and will enter the program during their third year, if they qualify.

To be admitted to Honours, students must have achieved an average of 3.3 (B+) in their Comparative Cultural Studies courses. Students must maintain an average of 3.3 in CCS courses and of 2.5 in non-CCS courses in order to maintain Honours standing.

The Honours in Comparative Cultural Studies requires the completion of 48 ch of CCS courses. Specific requirements are as follows:

Each student's program of study must be approved by the program advisor.

Honours (48 ch plus 6 ch in an additional language)

Lower Level

- CCS 2021
- 9 ch of additional 1000- or 2000-level CCS courses
- 6 ch in an additional language

Upper Level

- CCS 3021 and CCS 3023
- 9 ch chosen from CCS 3011, CCS 3065, CCS 3794, CCS 3795, CCS 3909, CCS 3064, CCS 3904
- 15 ch of upper level additional CCS electives
- CCS 5000

[To complete an Honours program in CCS with a concentration in German or a concentration in Spanish, students must complete 6 ch of courses in the relevant language and 15 ch of upper level electives in the chosen concentration. See the lists below under "Optional Concentrations".]

Joint Honours (36 ch plus 6 ch in an additional language)

Lower Level

- CCS 2021
- 6 ch of additional 1000- or 2000-level CCS courses

- 6 ch in an additional language

Upper Level

- CCS 3021 and CCS 3023
- 6 ch chosen from CCS 3011, CCS 3065, CCS 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 15 ch of additional upper level CCS electives
- CCS 5000 (optional)

Major Program
A Major in Comparative Cultural Studies requires the completion of 36 ch of CCS courses, with a grade of C or better in each. The specific requirements are as follows:
Major (36 ch plus 6 ch in an additional language)
Lower Level

- CCS 2021
- 9 ch of additional 1000- or 2000-level CCS courses
- 6 ch in an additional language

Upper Level

- CCS 3021 and CCS 3023
- 6 ch chosen from CCS 3011, CCS 3065, CCS 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 12 ch of additional upper level CCS electives

Double Major (30 ch plus 6 ch in an additional language)
Lower Level

- CCS 2021
- 3 ch of additional 1000- or 2000-level CCS courses
- 6 ch in an additional language

Upper Level

- CCS 3021 and CCS 3023
- 6 ch chosen from CCS 3011, CCS 3065, CCS 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 12 ch of additional upper level CCS electives

Optional Concentrations
Students completing a Major or Honours in Comparative Cultural Studies can receive an additional concentration by meeting all of the criteria for the Major or Honours listed above plus the criteria listed below:
CCS: German

- Complete 6 ch of German language courses

For their 12 ch of elective courses:

- Complete CCS 3061 or CCS 3071
- Complete the remaining 9 ch of additional courses selected from the following list:

German Concentration Electives*

CCS 3045	CCS 3063	CCS 3121	CCS 3072
CCS 3066	CCS 3054	CCS 3123	
CCS 3061	CCS 3055	CCS 3071	

*With prior permission, students may take up to two courses from outside the department to satisfy the requirements for the concentration.
CCS: Spanish

- Complete 6 ch of Spanish language courses

For their 12 ch of elective courses:

- CCS 3904
- Complete the remaining 9 ch of additional courses selected from the following list:

Spanish Concentration Electives*

CCS 3014	CCS 3062	CCS 3113	CCS 3455
CCS 3456	CCS 3909	CCS 3973	CCS 3974
CCS 3984	CCS 4062		

*With prior permission, students may take up to two courses from outside the department to satisfy the requirements for the concentration.
Combined CCS/MAAC programs
In addition to pursuing joint study with other programs, students have the opportunity to complete a Double Major or Joint Honours in the Department of Culture and Media Studies' two interdisciplinary programs: Comparative Cultural Studies and Media Arts & Cultures. Because the two programs already share a set of core courses, the unique guidelines for combining the two are outlined below.
Double Major in CCS and MAAC
Lower Level

- CCS/MAAC 2021
- 3 ch of additional 1000- or 2000-level CCS courses
- 9 ch of additional 1000- or 2000-level MAAC courses
- 6 ch in an additional language

Upper Level

- CCS/MAAC 3021, CCS 3023
- 6 ch chosen from CCS 3011, CCS 3065, CCS 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 12 ch of additional upper level CCS electives
- 12 ch of additional upper level MAAC electives

Students should be careful not to double-count any courses cross-listed as both CCS and MAAC.
Joint Honours in CCS and MAAC
Lower Level

- CCS/MAAC 2021
- 6 ch of additional 1000- or 2000-level CCS courses
- 6 ch of additional 1000- or 2000-level MAAC courses
- 6 ch in an additional language

Upper Level

- CCS/MAAC 3021, CCS 3023
- 6 ch chosen from CCS 3011, CCS 3065, CCS 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 15 ch of additional upper level CCS electives
- 18 ch of additional upper level MAAC electives
- MAAC 5000 or MAAC 5980
- CCS 5000 (optional)

Students should be careful not to double-count any courses cross-listed as both CCS and MAAC.
Minor Program
A Minor in Comparative Cultural Studies requires the completion of 24 ch of CCS courses with a grade of C or better:

- CCS 2021
- One of CCS 3021 or CCS 3023
- 12 ch of the remaining 24 ch must be upper level CCS courses.

Under certain circumstances, language acquisition courses may be counted for lower level requirements. The program must be approved by the advisor for the program.
Contact: Dr. Sophie Lavoie, Dept of Culture and Media Studies, University of New Brunswick, Carleton Hall, 337, 1 506 458-7469, lavoie@unb.ca.

CRIMINOLOGY AND CRIMINAL JUSTICE

DEPARTMENT OF SOCIOLOGY

General Office:	Tilley Hall, Room 20
Mailing Address:	Department of Sociology The University of New Brunswick P.O. Box 4400 Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4849
Email:	socio@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/sociology/index.html

FACULTY
Program Director: Dr. David Hofmann

- Dafnos, Tia, BA (U of T), MA, PhD (York), Assoc Prof - 2015
- Gill, Carmen, BA, MA, PhD (Qc), Prof - 2004
- Hofmann, David, BA (Western), MSc (U de Montreal), PhD (Waterloo), Assoc Prof - 2016
- Holtmann, Cathy, BA (Winnipeg), MDiv (St Michael's), MA (UNB), PhD (UNB), Prof & Dir MMF Ctr for Family Violence Research - 2015

General Information
The Criminology and Criminal Justice program is offered by the Department of Sociology as a named degree, with Minor, Major/Double Major, and Honours/Joint Honours options. This program offers students a sociologically grounded education with practical applications to issues involving crime, criminality, and justice.
Minor, Major, and Honours Programs
Minor
The Minor in Criminology and Criminal Justice consists of 24 ch, of which 12 ch must be upper level courses.
The following courses are compulsory for a Minor in Criminology and Criminal Justice: CRIM/SOCI 1603, CRIM/SOCI 2015.
The remainder of the credits required for a Minor in Criminology and Criminal Justice must be chosen from the Criminology and Criminal Justice program courses listed below.
Only courses completed with a grade of C or higher count towards a Minor in Criminology and Criminal Justice.
Major

337

Students intending to take a Single Major in Criminology and Criminal Justice (or a Double Major that combines this program with another discipline) are usually expected to have completed at least 12 ch of Sociology/Criminology courses prior to entering their Major program. With the permission of the Director of the Criminology and Criminal Justice program, students may count up to 6 ch of 3000-level or 4000-level courses in related subjects for credit towards the requirements of a Major in Criminology and Criminal Justice.

Students may not pursue a Double Major that combines Criminology and Criminal Justice with Sociology.

• Single Majors in Criminology and Criminal Justice must complete a minimum of 36 ch of Criminology/Sociology courses, of which 24 ch must be at the upper level.

• Double Majors in Criminology and Criminal Justice must complete a minimum of 30 ch of Criminology/Sociology courses, of which 21 ch must be at the upper level.

The following courses are compulsory for the Major (or Double Major) in Criminology and Criminal Justice: CRIM/SOCI 1603, CRIM/SOCI 2015, SOCI 2022, SOCI 3004, CRIM/SOCI 3613, SOCI 4011, and SOCI 4022. The remainder of the courses required for the Major (or Double Major) in Criminology and Criminal Justice must be chosen from the Criminology and Criminal Justice program courses listed below.

Only courses completed with a grade of C or higher count towards a Major (or Double Major) in Criminology and Criminal Justice.

Honours

Students intending to take Single Honours in Criminology and Criminal Justice are usually expected to have completed at least 12 ch of Criminology/Sociology courses with a GPA of 3.3 or better, prior to entering the Honours program. Students are also expected to have an overall GPA of 2.7 or better across their undergraduate courses. Students must maintain a minimum average of 3.3 in Criminology/Sociology courses (and 2.7 across other undergraduate courses) throughout their program.

Students may not pursue a Joint Honours program that combines Criminology and Criminal Justice with Sociology.

Entry for non-Arts Faculty students or for students having taken a large number of non-Arts Faculty courses who have transferred into Arts might still be approved by the Director of the Criminology and Criminal Justice program.

• For Single Honours in Criminology and Criminal Justice, students must complete a minimum of 42 ch of Criminology/Sociology courses, of which 30 ch must be at the upper level.

• For the Criminology and Criminal Justice component of a Joint Honours program, students must complete a minimum of 36 ch of Criminology/Sociology courses, of which 21 ch must be at the upper level.

The following courses are compulsory for the Honours program (Single or Joint Honours) in Criminology and Criminal Justice: CRIM/SOCI 1603, CRIM/SOCI 2015, SOCI 2022, SOCI 3004, CRIM/SOCI 3613, SOCI 4011, SOCI 4022, and CRIM/SOCI 4301, in addition to 6 ch of 4000-level elective Criminology/Sociology courses.

Students in the Single Honours program in Criminology and Criminal Justice have the option to research and write an Honours Thesis. The project should produce a 40-60 page manuscript and must be approved by the Director of the Criminology and Criminal Justice program. This option is available only to students with a CGPA of 3.4 or better.

The following courses are compulsory for the thesis-based Honours program in Criminology and Criminal Justice: CRIM/SOCI 1603, CRIM/SOCI 2015, SOCI2022, SOCI 3004, CRIM/SOCI 3613, SOCI 4011, SOCI 4022, CRIM/SOCI 4301, and SOCI 5000.

The remainder of the courses required for Honours (or Joint Honours) in Criminology and Criminal Justice must be chosen from the Criminology and Criminal Justice program courses listed below.

Only courses completed with a grade of C or higher count towards Honours (or Joint Honours) in Criminology and Criminal Justice.

Criminology and Criminal Justice Program Elective Courses

CRIM/SOCI 2563	ANTH 3523	SOCI 2433
CRIM/SOCI 2573	ARTS 3000	SOCI 3115
CRIM/SOCI 2575	ARTS 3001	SOCI/POLS 3312
CRIM/SOCI 2603	ARTS 3002	UNBSJ PSYC 3265
CRIM/SOCI 2613	ARTS 4000	UNBSJ SOCI 2611
CRIM/SOCI 2663	FVI/SOCI 2003	UNBSJ SOCI 2805
CRIM/SOCI 3385	FVI/SOCI 3006	UNBSJ SOCI 3614
CRIM/SOCI 3623	GWS 1003	
CRIM/SOCI 3634	HIST 3374	
CRIM/SOCI 3636	HIST 4861	
CRIM/SOCI 3662	HIST 5605	
CRIM/SOCI 4513	PHIL 1201	
CRIM/SOCI 4337	PHIL 3331	
CRIM/SOCI 4355	POLS 3257	
CRIM/SOCI 4573	PSYC3343	
CRIM/SOCI 4585		

CULTURE AND MEDIA STUDIES

DEPARTMENT OF CULTURE AND MEDIA STUDIES

General Office:	Carleton Hall, Room 333
Mailing Address:	Department of Culture and Media Studies University of New Brunswick Box 4400, Fredericton, New Brunswick, Canada E3B 5A3
Phone:	(506) 453-3571
Email:	cams@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/cals/index.html
Chair:	Scott Preston

FACULTY

- Cruikshank, Lauren, BA (Bishop's), MA (Queen's), PhD (European Graduate School), Associate Professor - 2014
- Guse, Anette, Staatsexamen I & II (Heidelberg), MA (Wat), PhD (Queen's), Associate Professor - 2005
- Hamling, Anna, BA, BEd (Cardiff), MA (Queen's), PhD (Warsaw), Professor - 1999
- Hornsby, Richard, Mus.Bac, Perf, M.M.
- Lavoie, Sophie M., BA (King's College/Dalhousie), MA (Queen's), DEA, PhD (Provence), Professor - 2008
- LeBel, Sabine, BA, BAH (Trent), MA, PhD (York), Assistant Professor - 2018
- Preston, Scott, BFA, MA (Concordia), PhD (York), Associate Professor & Chair - 2010
- Reid, Allan, BA (Sask), MA, PhD (Alberta), Professor – 1991 (retired)

The twin forces of globalization and technological change continue to reshape our increasingly complex and interconnected world. These circumstances compel us to respond to new challenges and new opportunities by understanding and appreciating diversity, by learning to navigate established and emerging mediascapes, and by discovering new ways to express ourselves through music, film, media arts, and multi-lingual communication.

The Department of Culture and Media Studies invites students to explore culture and cultural forms in an interdisciplinary environment. Students learn about culture through the lenses of film and media, literature, music, and other art forms, as well as the study of foreign languages. All of these subjects are examined in a variety of contexts and perspectives, from the practical to the critical and theoretical.

The Department of Culture and Media Studies offers the following academic programs:

- Comparative Cultural Studies: Minor, Major, Honours;
- Film Production: Major, (MAAC Concentration); Certificate in Film Production;
- German: CCS Concentration;
- Media Arts and Cultures: Minor, Major, Honours;
- Music: Minor
- Spanish: CCS Concentration.
- Film Studies: Minor (Interdepartmental Program)

The Department also offers language acquisition courses in Japanese, Russian, and Chinese. For course listings consult Section H of this calendar or visit the Departmental website at http://www.unb.ca/fredericton/arts/departments/cals/index.html

DRAMA

General Office:	Carleton Hall, Room 247
Mailing Address:	Department of English The University of New Brunswick P.O. Box 4400 Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4676
Fax:	(506) 453-5069
Email:	lfalken@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/english/undergrad/drama/index.html

FACULTY

Director: Dr. Len Falkenstein

- Ball, John C., BA, MA, PhD (Tor), Prof - 1995
- Falkenstein, Len, BA, MA (Sask), PhD (Alta), Prof - 1999
- Finlay, Tatrina, BA (Mt Allison), MA (UNB), Associate Teaching Prof - 2008

General Information

The UNB Drama program offers pre-professional training in all aspects of theatre, including acting, directing, stage management, and costume, set, lighting, and sound design. Students in the program stage 5-7 major productions annually under the auspices of Theatre UNB, the production wing of the program. The Drama program is administratively housed within the Department of English.

Programs of Study
Double Major
For the Drama component of a Double Major, students take a total of 30 ch chosen from required, recommended, and elective courses as listed below. Students can complete the Drama component of the Double Major over either 3 or 4 years, having entered the program in the first or second year of their studies. Required courses for the Double Major are DRAM 1173, DRAM 2173, DRAM 2174, DRAM 2175, DRAM 3170, and either DRAM 4170 or both DRAM 4173 and DRAM 4174. For the remaining 6 ch in the program, students can choose from a range of elective courses, with DRAM 3175 and ENGL 3877 recommended.

The recommended program of study is as follows:
Over years one and two, it is recommended that students take a total of either 9 ch or 12 ch of DRAM, drawn from DRAM 1173, DRAM 2173, DRAM 2174, DRAM 2175, as below. Courses may be taken in any order, except that students must have completed or be concurrently registered in DRAM 1173 or DRAM 2173 in order to take DRAM 2175.
Year One: DRAM 1173 and either DRAM 2173 or DRAM 2174
Year Two: DRAM 2173 (if not taken in 1st year) and DRAM 2174 (if not taken in 1st year) and DRAM 2175
Year Three: DRAM 3170
Year Four: DRAM 4170
The 6 ch of electives can be taken in any year. Students entering the program in the second year of their studies can take DRAM 1173 simultaneously with any 2000-level DRAM course. Students wishing to spread the work of DRAM 4170 across two different academic years can choose to take DRAM 4173 and DRAM 4174 in lieu of DRAM 4170. Students interested in the program are advised to consult the Director of Drama for further information.

Required and Elective Courses
Required Courses
DRAM 1173 Introduction to Acting and Performance (3 ch)
DRAM 2173 Acting: Body and Text (3 ch)
DRAM 2174 Technical Production and Design for the Theatre (3 ch)
DRAM 2175 Mainstage Production I (3 ch)
DRAM 3170 Advanced Drama Production (6 ch)
DRAM 4170 Thesis Production and Independent Project (6 ch) [or DRAM 4173 Thesis Production (3 ch) + DRAM 4174 Independent Drama Project (3 ch)]

Elective Courses
Recommended Electives
DRAM 3175 Mainstage Production II (3 ch)
ENGL 3877 Modern Drama (3 ch)
Other Electives
ENGL 3163 Creative Writing: Drama (3 ch)
ENGL 3260 Shakespeare (6 ch)
ENGL 3263 Shakespeare's Predecessors and Contemporaries (3 ch)
ENGL 3269 Shakespeare's Now (3 ch)
CCS 3123 Berlin to Broadway: Musical Theatre across the Oceans (3 ch)
CLAS 3403 The Comic Theatre of Greece and Rome (3 ch)
CLAS 3413 The Tragic Theatre of Greece and Rome (3 ch)
FILM 3999/MAAC 3999 Editing and Post Production (3 ch)
FR 3684 Théâtre français/French Theatre (3 ch)
FR 3884 Théâtre du Canada français/The Theatre of French Canada (3 ch)
MAAC 3101 Media Design I (3 ch)
Equivalent courses offered by St. Thomas University can also be used for the Double Major, with the permission of the Director of Drama. Other courses, including some offerings in Film, Creative Writing, and Music, can also be taken as electives, with the permission of the Director of Drama.

Minor
The Drama Minor consists of 24 ch chosen from required, recommended, and elective courses as listed below. Students can complete the Minor over either 3 or 4 years, having entered the program in the first or second year of their studies. Required courses for the Minor are DRAM 2173, DRAM 2174, DRAM 2175, DRAM 3170, and either DRAM 4170 or both DRAM 4173 and DRAM 4174. For the remaining 3 ch in the program, students can choose from a range of elective courses, with DRAM 1173 and ENGL 3877 being strongly recommended.

The recommended program of study is as follows:
In years one and two, it is recommended that students take a total of either 9 ch or 12 ch of DRAM courses, drawn from DRAM 1173, DRAM 2173, DRAM 2174, DRAM 2175, as below. Courses may be taken in any order, with the exception that students must have completed or be concurrently registered in DRAM 1173 or DRAM 2173 in order to take DRAM 2175.
Year One: either DRAM 1173 or DRAM 2173 plus either DRAM 2174 or DRAM 2175
Year Two: DRAM 2173 and/or DRAM 2174 and/or DRAM 2175
Year Three: DRAM 3170
Year Four: DRAM 4170
The remaining 3 ch of electives can be taken in any year. Students entering the program in the second year of their studies can take DRAM 1173 simultaneously with any 2000-level DRAM course. Students wishing

to spread the work of DRAM 4170 across two different academic years can choose to take DRAM 4173 and DRAM 4174 in lieu of DRAM 4170. Students interested in the program are advised to consult the Director of Drama for further information.

Required and Elective Courses
Required Courses
DRAM 2173 Acting: Body and Text (3 ch)
DRAM 2174 Technical Production and Design for Theatre (3 ch)
DRAM 2175 Mainstage Production I (3 ch)
DRAM 3170 Advanced Drama Production (6 ch)
DRAM 4170 Thesis Production and Independent Project 6 ch [or DRAM 4173 Thesis Production (3 ch) + DRAM 4174 Independent Drama Project (3 ch)]

Elective Courses
Recommended Electives
DRAM 1173 Introduction to Acting and Performance (3 ch)
ENGL 3877 Modern Drama (3 ch)
Other Electives
ENGL 2195 Introduction to Creative Writing: Poetry and Drama (3 ch)
ENGL 2263 Shakespeare and Film (3 ch)
ENGL 3163 Creative Writing: Drama (3 ch)
ENGL 3260 Shakespeare (6 ch)
ENGL 3263 Shakespeare's Predecessors and Contemporaries (3 ch)
ENGL 3269 Shakespeare Now (3 ch)
CCS 3123 Berlin to Broadway: Musical Theatre across the Oceans (3 ch)
CLAS 3403 The Comic Theatre of Greece and Rome (3 ch)
CLAS 3413 The Tragic Theatre of Greece and Rome (3 ch)
FILM 3999/MAAC 3999 Editing and Post Production (3 ch)
FR 3684 Théâtre français/French Theatre (3 ch)
FR 3884 Théâtre du Canada français/The Theatre of French Canada (3 ch)
MAAC 3101 Media Design I (3 ch)
Equivalent courses offered by St. Thomas University can also be used for the Minor, with permission of the Director of Drama. Other courses, including some offerings in Film, Creative Writing, and Music, can also be taken as electives, with the permission of the Director of Drama.

ECONOMICS
DEPARTMENT OF ECONOMICS

General Office:	Singer Hall, Room 465
Mailing Address:	Department of Economics University of New Brunswick P.O. Box 4400, Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4828
Fax:	(506) 453-4514
Email:	econ@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ economics/index.html
Chair:	Dr. Luc Theriault

FACULTY
- Chowdhury, Murshed, BSS, MSS (Shah Jalal), MA, PhD (Manit.), Assoc Prof - 2016
- Dalkir, Elif, BSc (Mathematics-METU), MS (Bogazici), MA (Mathematics-Kansas), PhD (Economics & Mathematics - Kansas), Assoc. Prof - 2012
- Dalkir, Mehmet S., BS, MS (Engineering-METU), MA (Kansas), PhD (Kansas), Assoc. Prof - 2005
- Emery, Herbert, BA (Qu.), MA, PhD (British Columbia), Vaughan Chair & Director of Policy Studies Centre, Prof - 2016
- Farnworth, Mike, BA, MA (Qu.), PhD (McM), Assoc. Prof - 2000
- Lantz, Van, BA (Car.), MA (Dal), PhD (S.Fraser), Prof (Joint Forestry & Enviro Mgmt) - 2000
- Myatt, Anthony E., BA (Lancaster), MA, PhD (McM), Prof - 1983
- Passaris, Constantine E., BA (American U, Cairo), MA (Nfld), PhD (Leicester), Prof - 1972
- Yevdokimov, Yuri, BSc (Sumy), MA (Academy of Science), MSc (Ill), PhD (Manit.), Prof (Joint Civil Eng.) - 1999
- Yu, Weiqiu, BSc (Shandong), MA (UNB), PhD (S. Fraser), Prof - 1993

Programs of Study
The Department of Economics offers Majors and Honours programs to students in the Faculties of Arts, Business Administration and Science. The Department also offers a Minor to students from all Faculties. The usual entry level courses are introductory microeconomics (ECON 1013 or ECON 1014) and introductory macroeconomics (ECON 1023 or ECON 1024).
Students normally choose a Majors/Honours program in their second or third year and should register with the Department at the beginning of the academic year. Registration forms can be obtained from the departmental secretary in SH465 or downloaded from the departmental website at: http://www.unb.ca/fredericton/arts/departments/economics/_resources/pdfs/minormajorhonoursform.pdf
Minimum Academic Standards

Students in all Faculties should note that the minimum grade in a course required by any of the Economics programs (Majors, Honours and Minor) is a "C". A grade of "D" is acceptable only if 1) the course is a normal part of the final year of that program, and is being taken for the first time in the final year; or 2) the course is not needed to meet the minimum credit hours of that program.

Economics Programs to Arts Students

Programs available to Faculty of Arts students include Majors and Honours in Economics, a Major in Economic Studies and a Minor in Economics. There is also a Minor in Public Policy jointly offered with Political Science.

Major in Economics

The Major consists of a minimum of 30 ch in Economics of which 24 ch must be in advanced courses (i.e., courses that start with the number 3 or higher are advanced). Required courses include ECON3023, ECON3013, and a 3 ch course in statistics. Since the Economics Department does not offer an undergraduate statistics course, most statistics courses offered by other Departments are acceptable as an Economics statistics credit, e.g. ADM2623/ ECON 3601.

Major in Economic Studies

This Major consists of a minimum of 30 ch in Economics, of which 24 ch must be in advanced courses. There are no other restrictions on course selection. The Economic Studies Program is appropriate for those who want a liberal arts background in Economics without the commitment to theory and statistics required by the Major in Economics.

Honours in Economics

There are two Honours programs: Single Honours and Joint Honours. They are suitable for students who intend to become professional economists, particularly those who plan to do graduate work at UNB or another university.

The Single Honours program consists of a minimum of 54 ch in Economics courses or approved substitutes, of which 36 ch must be in advanced courses. The Joint Honours program consists of 48 ch in Economics courses or approved substitutes, of which 24 ch must be in advanced courses.

Students may substitute up to 9 ch of non-Economics courses for non-compulsory Economics courses. Department of Economics approval is required. These substitute courses must be approved by the Director of Undergraduate Studies.

To remain in the Honours programs, a student must maintain a GPA of 3.0 in Economics courses and approved substitutes.

The following courses are compulsory for Honours students: ECON 3013 and ECON 3023, ECON3601/ADM2623 and ECON3628/ADM3628 or approved substitutes, ECON 3665, ECON4013, ECON4023, ECON4625, and ECON4665.

Minor in Economics

In addition to the Majors/Honours programs in Economics, a Minor in Economics is also available to students from all Faculties. The minor in Economics shall consist of at least 24 ch in Economics with at least 12 ch at the upper level.

Minor in Public Policy

This is a joint Minor proposed by the departments of Economics and Political Science. Students may minor in Public Policy by completing 24 ch of courses offered by the Department of Economics and the Department of Political Science. Students are required to complete 24 ch as follows:

a. 6 ch of economics (ECON) courses chosen from: ECON 1014 or ECON 1013, ECON 1024 or ECON 1023, ECON 2203, ECON 3505, ECON 3705, ECON 3905.
b. 6 ch of introductory political science (POLS) courses chosen from: POLS 1103, POLS 1203, POLS 2013, POLS 2202, POLS 2503, POLS 2603.
c. 6 ch of advanced economics (ECON) courses from: ECON 3055, ECON 3203, ECON 3504, ECON 3702, ECON 3755, ECON 3775, ECON 3801, ECON 3815, ECON 3845, ECON 3865.
d. 6 ch of advanced political science (POLS) courses from: POLS 3103, POLS 3213, POLS 3215, POLS 3241, POLS 3251, POLS 3257, POLS 3282, POLS 3284, POLS 3292, POLS 3391, POLS 3461, POLS 3647, POLS 4724.

Economics Programs to Business Administration Students

Please refer to the Faculty of Management for further details on the Economics Program in Business Administration.

Economics Programs to Science Students

Please refer to the Faculty of Science for further details on Economics Programs in Science.

Additional Programs: Co-operative Education Program

The Department operates a small Co-operative Education (Co-op) Program available to academically qualified Honour and Majors in Economics and Majors in Economic Studies. It is co-ordinated through the Faculty of Business Administration. This Program offers students the opportunity to undertake paid work-terms, the work to include economic research and analysis beyond classroom instruction. The Program offered within the Department consists of a minimum of three (3) four-month work-term sessions which may or may not be taken consecutively depending on the work-term offer taken. These work-term sessions are in addition to the normal eight semesters of academic study. The Program allows the student to obtain a Major in Economics or Economic Studies or Honours in Economics in addition to Co-op participation. Students normally apply to enter the Co-op program after completing the first year of study, but later admission may be possible.

The following Program rules Apply:

1. Admission into the Program is selective. Students must maintain a minimum GPA of 3.0 while participating in the Co-op Program.
2. Students must be fully registered at UNB during each work-term so that they can be considered as full-time students while working.
3. A Co-op fee will be charged for each registered 4-month work-term to cover placement and administration costs.
4. Students must undertake a minimum of 3 work-terms. The work-terms may alternate with study-terms, or the terms may run consecutively over two or three terms, depending on employer demand.
5. Each 4-month work term will be monitored directly by the employer, and by the departmental Co-op Director through oral and written communications with the employer and student. The student must complete a work-term report after each 4-month term. Work-term evaluations by the employer and work-term reports must be satisfactory for the Co-op designation to appear on university transcripts. Each successful work-term will appear on the student's transcript.
6. Students must complete at least one study-term after their last work-term.
7. The term "Co-operative Education in Economics" will follow the degree designation on the student's final transcript.

ENGLISH

DEPARTMENT OF ENGLISH

General Office:	Carleton Hall, Room 247
Mailing Address:	Department of English University of New Brunswick P.O. Box 4400 Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4676
Fax:	(506) 453-5069
Email:	english@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/english/
Chair:	Dr. John C. Ball

FACULTY

- Andrews, Jennifer, BA (McG), MA, PhD (Tor), Prof - 1999
- Austin, Diana, BA (UNB), MA (Qu), DPhil (Oxon), Prof Emerita - 2017
- Ball, John C., BA, MA, PhD (Tor), Prof & Chair - 1995
- Canitz, A. E. Christa, BA, MA (Birmingham), PhD (UBC), Prof (retired) - 2022
- Cockburn, Robert Hood, BA, MA (UNB), Prof Emeritus - 2004
- Davies, Gwendolyn, BA (Dal-King's), Ed Cert, MA (Tor), PhD (York), DCL (UKC), FRSC, Emerita Prof & Dean - 2008
- Effinger, Elizabeth, ARCT (Tor), BA, MA (Waterloo), PhD (UWO), Assoc Prof - 2016
- Falkenstein, Len, BA, MA (Sask), PhD (Alta), Prof - 1999
- Finlay, Tatrina, BA (Mt Allison), MA (UNB), Associate Teaching Professor - 2008
- Gibbs, Robert J., BA (UNB), BA (Cantab.), MA, PhD (UNB), Prof Emeritus - 1989
- Gray, Robert W., BA (UVic), MA (Manitoba), PhD (Alberta), Prof – 2008
- Huebert, David, BA (Dal-King's), MA (UVic), PhD (UWO), Asst Prof - 2021
- Jarman, Mark, BA (UVic), MFA (Iowa), Prof (retired) – 2022
- Jodoin, Lisa, BA (Algoma), MA (Lakehead), Lecturer - 2021
- Klinck, Anne L., BA, MA (Oxon), MA (UBC), MA (McG), PhD (UBC), Prof Emerita - 2010
- Leckie, Ross, BA (McG), PD/AD (Educ) (Alta), MA (C'dia), PhD (Tor), Prof Emeritus - 2021
- Martin, Randall, BA (Tor), MA (Birmingham), DPhil (Oxon), Prof (retired) - 2021
- Ploude, Roger J., BA (St. Thomas), MA (Dal), PhD (Qu), Prof Emeritus - 2010
- Rimmer, Mary P., BA (C'dia), AM, PhD (Harv), Prof (retired) - 2017
- Robertson, Lisa C., BA (UVic), MA (Royal Holloway), PhD (Warwick), Asst Prof – 2022.
- Schryer, Stephen, BA (McMaster), MA (UWO), PhD (California, Irvine), Prof - 2009
- Sinclair, Sue, BA (Mt. Allison), MA (UNB), MA (Tor), PhD (Tor), Assoc Prof - 2016

- Snook, Edith, BA, MA (Alta), PhD (UWO), Prof – 2001

General Information

For detailed information on course offerings and regulations, students should obtain a copy of the Department's Undergraduate Handbook issued in spring each year. A PDF file of the Handbook is available online here:
https://www.unb.ca/fredericton/arts/_assets/documents/english/handbook-undergrad.pdf.

The Department offers in its general program a wide range of courses on British, American, Canadian, and Postcolonial literature and on Indigenous literatures of Turtle Island. It also offers courses in creative and expository writing, in film studies, and in drama production, some of which are parts of special programs in Creative Writing, in Film, and in Drama. Students in all courses in English are required to produce original critical and/or creative work.

The Department of English affirms the crucial importance of the interactive classroom experience in all its courses designed for classroom delivery. Since students must be in class in order to have that experience, no student can pass any classroom ENGL course without attending at least half of the classes in that course. There are specific attendance policies for courses at the various levels; generally, it is expected that no student will miss more than four class hours per term without good reason.

In consultation with one of the departmental advisors, students may take courses in English at St. Thomas University in lieu of those listed in this Calendar, provided the regulations concerning transfer credits are met.

1000- and 2000-Level Programs: General Regulations and Information

The 1000- and 2000- level courses are designed to give students a fuller appreciation of major works of literature and to improve their ability to write effective English. These courses are intended to be of value both to students who will specialize in English and to students in Arts and other Faculties who have a general interest in English.

Course Numbering

Courses whose numbers begin with the digit 1 are introductory; those beginning with 2 are intermediate. Course numbers of advanced-level courses begin with 3, 4, or 5. Students above the first-year level who have taken a previous university English course must elect 2000-level courses, except for ENGL 1000, which may be elected with departmental permission, and ENGL 1103 and ENGL 1104. Students above the first-year level who have *not* taken a previous university English course may elect either 1000- or 2000-level courses except ENGL 2011 and ENGL 2012.

Apart from the initial numeral indicating the year in which a course is normally taken, the numbering of courses is merely a means of identification and does not indicate that one course is more or less advanced than another. Students must have taken 6 ch of 1000- or 2000-level courses before enrolling in a course at the advanced level. Any student intending to major or honour in English should take ENGL 2011 and 2012; to enter these courses, a grade of C or better in ENGL 1000 or equivalent is required. First-year students in Faculties other than Arts must elect 1000-level courses.

Second-year students may take up to 12 ch of English courses, normally at the intermediate level. Students may not take a 2000-level course in any subject area in which they have already had an advanced-level course.

Please contact the Director of First and Second Year for more information.

Major, Honours, and Minor

Majors and Honours students must complete ENGL 1000 (or equivalent), ENGL 2011, and ENGL 2012. Students should note that any courses compulsory for other degree programs may not be counted towards an English Major, Honours, or Minor program.

Majoring in English

Students who intend to major in English should contact one of the Co-Directors of Majors and Honours to discuss their program for the following year and to register in the program. Students should normally declare their Major before completing the first 60 ch of the BA or BAS program. The appropriate Co-Director of Majors and Honours should also be consulted regarding any changes in a student's program.

Single Major students must complete a minimum of 42 ch of English courses, including the following:

- ENGL 1000 (or approved equivalent)
- ENGL 2011 and ENGL 2012
- 30 ch of upper-level English courses:
    - 6 ch in literature in English before 1660
    - 6 ch in literature in English, 1660-1900
    - 18 ch of English electives.

Double Major students must complete a minimum of 36 ch of English courses, including the following:

- ENGL 1000 (or approved equivalent)
- ENGL 2011 and ENGL 2012
- 24 ch of upper-level English courses:
    - 6 ch in literature in English before 1660
    - 6 ch in literature in English, 1660-1900

    - 12 ch of English electives.

All courses to be counted toward the fulfilment of the minimum Major requirement must be passed with a grade of C or better.

Students may include a total of up to 9 ch of upper-level courses drawn from the following group in the minimum requirements for the Single or Double Major: Film Studies, Writing (creative writing or screenwriting), and Drama Production.

Optional Major Program: English (Creative Writing)

Students wishing to concentrate in creative writing may take the Major option in English (Creative Writing). Students choosing this program option must complete the normal English Major requirements (as explained under "Majoring English"), along with creative writing courses, as follows:

- **both** ENGL 2195 **and** ENGL 2196

and

- at least **two** of the following five course options:
    - ENGL 3123
    - ENGL 3143
    - ENGL 3153
    - ENGL 3163
    - **either** ENGL 3183 **or** ENGL 3186.

Additional creative writing courses may be taken as elective outside the requirements of the English program.

To enrol in this program option, students should consult the Director of Creative Writing and one of the Co-Directors of Majors, Honours, and Minors.

Double Major in Drama

Students can study Drama as part of a Double Major program. For details, see the Drama Program.

Honours Program

Students enter the Honours program in their third year but may declare their intention of pursuing Honours during their second year. Only in exceptional circumstances will students be admitted in their fourth year. ENGL 1000 (or equivalent) is required of those who wish to enrol in Honours. Students should complete ENGL 2011 and ENGL 2012 by end of the second year and must have met this requirement by the end of the third year. The student must have achieved on average of 3.3 (B+) in these or other English literature courses. In order to retain Honours standing, students must maintain an average of 3.3 in English courses and of 2.5 in non-English courses.

Single Honours

Single Honours students must complete 60 ch in English courses in total, including the following:

- ENGL 1000 (or equivalent)
- ENGL 2011 and ENGL 2012
- 6 ch in literature in English before 1660 at the upper level (**not** including Honours seminars)
- 6 ch in literature in English, 1660-1900, at the upper level (**not** including Honours seminars)
- five Honours seminars (including ENGL 5083), for a total of 15 ch at the 5000 level (Honours students who have already taken ENGL 3083 should take five regular Honours seminars.)
- 21 ch of upper-level ENGL electives (usually 3000-level courses, but students may choose to take an extra Honours seminar).

Joint Honours

Joint Honours students must complete a total of 39 ch of English courses, including the following:

- ENGL 1000 (or equivalent)
- ENGL 2011 and ENGL 2012
- 6 ch in literature in English before 1660 at the upper level (**not** including Honours seminars)
- 6 ch in literature in English, 1660-1900, at the upper level (**not** including Honours seminars)
- four Honours seminars (including ENGL 5083), for a total of 12 ch at the 5000 level (Honours students who have already taken ENGL 3083 should take four regular Honours seminars).
- one 3 ch ENGL elective at the upper level (usually a 3000-level course, but students may choose to take an extra Honours seminar).

Honours students may include a total of up to 9 ch of upper-level courses drawn from the following group: Film Studies, Writing (creative writing or screenwriting), and Drama Production. Students are required to consult with the appropriate Co-Director of Majors and Honours in choosing their courses so as to ensure that they follow a well-balanced program. Students interested in Honours English are encouraged to discuss the program with one of the Co-Directors of Majors and Honours.

Optional Honours Program: English (Creative Writing)

Students wishing to concentrate in creative writing may take the Honours option in English (Creative Writing). Students choosing this program option must complete the normal English Honours requirements (as explained under "Honours Program") along with creative writing courses, as follows:

- **both** ENGL 2195 **and** ENGL 2196
- at least **two** of the following five course options (Joint Honours students take **one** of these courses as part of their English program requirements):
  - ENGL 3123
  - ENGL 3143
  - ENGL 3153
  - ENGL 3163
  - **either** ENGL 3183 or ENGL 3186.

Additional creative writing courses may be taken as electives outside the requirements of the English program.

To enrol in this program option, students should consult the Director of Creative Writing and one of the Co-Directors of Majors, Honours, and Minors.

Minor Program
The Minor in English consists of at least 24 ch in ENGL completed with a grade of C or better, at least 12 ch of these from advanced-level courses. The courses for the Minor must be approved by one of the Co-Directors of Majors and Honours, and must form a "coherent set or sequence of courses" as called for by the general university regulations for the Minor. Students should note that any courses compulsory for their programs may not be counted towards a Minor.

Minor in English
Students pursuing an ENGL Minor are strongly advised to take ENGL 1000. Other 1000- and 2000- level ENGL courses can also be taken in lieu of ENGL 1000; students should consider pairing a composition course (ENGL 1103 or ENGL 1144) with any of the 2000-level literature courses. In addition to ENGL 1000, ENGL 2011 and ENGL 2012 are strongly recommended for the Minor.

Students transferring credits from another university should note that at least half the credits counted towards a UNB Minor in English must be from courses taken at the University of New Brunswick.

Minor in English (Creative Writing)
The Minor in English (Creative Writing) consists of 24 ch in ENGL as specified below, including at least 12 ch of 3000- or 4000-level courses. All courses to be counted towards the Minor must be completed with a grade of C or better and must form a "coherent set or sequence of courses" as called for by the general university regulations for the Minor. The courses for the Minor in English (Creative Writing) must be approved by one of the Co-Directors of Majors and Honours. Students should note that any courses compulsory for their degree program may not be counted towards a Minor.

Required Courses (12 ch):
- **Both** ENGL 2195 **and** ENGL 2196
- at least two of the following five course options:
  - ENGL 3123
  - ENGL 3143
  - ENGL 3153
  - ENGL 3163
  - **either** ENGL 3183 or ENGL 3186.

Electives (12 ch):
- Any other 12 ch of ENGL courses, including at least 6 ch at the 3000- and 4000-level; additional courses in Creative Writing may be included as electives.

Students transferring credits from another university should note that at least half the credits counted towards a UNB Minor in English (Creative Writing) must be from courses taken at the University of New Brunswick.

Minor in Drama
A **Minor in Drama** is also offered. For details, see the Drama Program.

FILM STUDIES

Mailing Address:	c/o Faculty of Arts University of New Brunswick P.O. Box 4400, Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4655
Fax:	(506) 453-5102
Email:	arts@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/film/minor.html

FACULTY
- Patrick Bergeron, PhD - French
- Jeffrey Brown, PhD - History
- Robert Gray, PhD - English (Creative Writing) & Film
- Anette Guse, PhD - Culture and Media Studies

- Lisa Jodoin, MA - English (Creative Writing) & Film
- Sophie Lavoie, PhD - Culture and Media Studies
- Sabine LaBel, PhD - Culture and Media Studies
- Tony Merzetti - NB Film Makers' Co-Op
- Tony Myatt, PhD - Economics
- Scott Preston, PhD - Culture and Media Studies - **ADVISOR**
- Brent Wilson, PhD - Gregg Centre for War and Society

General Information
The Film Studies Minor offers students from all Faculties the opportunity to study film (and video) from a variety of perspectives, including theory, history, and analysis, as well as a range of topics around national cinemas and genres, among others. In addition, students have the opportunity to study film from creative and practical perspectives in production and other practice-driven courses as well as creative writing for the screen. For details concerning courses and requirements, see below.

Eligibility
Admission to the Film Studies Minor is open to students from any Faculty who have completed 30 ch towards a degree. Students should contact the Advisor for the Film Studies Minor for program approval and advising. Students are encouraged to begin the Minor in the second year of their program.

Program of Study
The Minor consists of 24 credit hours, approved by the Advisor. Of these 24 ch, FILM 2022 / MAAC 2022 "The Art of Film," FILM 2909 / ENGL 2909 "International Film History," and FILM 3903 / ENGL 3903 "Film Theory" are required, and at least 12 ch must be at the upper level. Students must take approved courses from at least 3 different disciplines, including CCS, ECON, ENGL, FILM, FR, HIST, MAAC, and PHIL.

Courses will be selected from the following list. Additional courses may be counted towards the Minor subject with the approval of the Advisor.

COMPARATIVE CULTURAL STUDIES (CCS)
CCS 3066 / FILM 3066 / MAAC 3066 Trauma and Seduction: Early German Cinema
CCS 3072 / FILM 3072 / MAAC 3072 Contemporary German Cinema and Media
CCS 3455 Latin American Cinema
CCS 3456 / SPAN 3456 The Cinema of Spain
CCS 3973 / SPAN 3973 Latin American Narrative at the Movies

ECONOMICS
ECON 2009 Understanding Economics through Film

ENGLISH
ENGL 2263 Shakespeare and Film
ENGL 2909 / FILM 2909 International Film History
ENGL 3183 / FILM 3183 Creative Writing: Screenwriting for Short Formats
ENGL 3186 / FILM 3186 Creative Writing: Feature Screenplay
ENGL 3903 / FILM 3903 Film Theory
ENGL 3907 / FILM 3907 Film Genre
ENGL 3908 / FILM 3908 Zombies in Film
ENGL 3916 / FILM 3916 Canadian Film since 1967
ENGL 3917 / FILM 3917 National Cinemas
ENGL 3918 / FILM 3918 The French New Wave

FRENCH
FR 3524 Roman et Cinéma / The Novel and Film
FR 4524 Cinéma Québécois / Quebecois Film
FR 4534 Cinéma français / French Cinema

HISTORY
HIST 1315 Canadian History on Film
HIST 3415 America at the Movies
HIST 3417 Dark Artifacts: Film Noir and the Other America, 1940-1965
HIST 3803 War through Film
HIST 5331 Film and History in Canada

MEDIA ARTS & CULTURES (MAAC)
MAAC 2022 / FILM 2022 The Art of Film
MAAC 2998 / FILM 2998 Digital Film Production I
MAAC 2999 / FILM 2999 Digital Film Production II
MAAC 3065 / CCS 3065 The Thrill of Fear: Horror Narratives across Media & Cultures
MAAC 3075 / FILM 3075 Framing Reality: Theory and Practice of Documentary Media
MAAC 3082 / FILM 3082 / CCS 3082 History of Canadian Cinema
MAAC 3212 Lens Media
MAAC 3362 Sound Design
MAAC 3795 / CCS 3795 Dark Futures: Visions of Dystopia since World War I
MAAC 3999 / FILM 3999 Editing and Post-Production

PHILOSOPHY
PHIL 2501 Philosophy and Film

FRENCH
DEPARTMENT OF FRENCH

General Office:	Tilley Hall, Room 231

Mailing Address:	Department of French University of New Brunswick P.O. Box 4400, Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4651
Fax:	(506) 453-3565
Email:	french@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/french/
Chair:	Dr. Christine Horne

FACULTY

- Bergeron, Patrick, BA, MA (Laval), PhD (Laval-Montpellier), Prof - 2005
- Cichocki, Wladyslaw, BSc, MA, PhD (Tor), Prof - 1985
- Horne, Christine, BA (Sainte-Anne), MA, PhD (Dal), Assoc Prof - 1999
- Richard, Chantal, BA (UNB), MA, PhD (Moncton), Assoc Prof - 2008
- Viau, Robert, BA, MA, PhD (Ott), Prof – 1989

General Information
Placement
The Department of French offers a broad range of language classes in order to accommodate as many students as possible. It is therefore imperative that students consult the Department before registering for a French course for the first time at UNB. To begin the process, students should contact the departmental secretary in Tilley Hall, room 231 (email:french@unb.ca).

Language courses are offered at all levels. Advanced-level courses are offered in language, Linguistics, and Literature. In keeping with traditional practice, Department of French recognizes that an undergraduate program in French studies must include aspects of literary, cultural, and linguistic enquiry. Students may find that course described as primarily "language" courses include some or all of these elements. Classes are normally taught in French.

The Department of French cannot guarantee a place in a course until this consultation has taken place. The Department reserves the right to remove from the class lists or wait lists any students who have not consulted the Department or who miss three consecutive class hours within the first two weeks of classes.

Introductory Courses
1000-and 2000-level languages courses are offered in complementary pairs so that students can take French throughout a full academic year (two consecutive terms); it is recommended that students do so whenever possible. The Department of French belives that taking a French course that is below a student's ability is not a productive use of the student's time and that it constitutes academic dishonesty.

- FR 1014, followed by FR1015;
- For students who have not previously studied French or who have not completed Grade 12 (Core) French.
- FR 1034, Followed by FR 1044;
- For students who have completed Grade 12 (Core) French.

The following course combinations are recommended depending on the student's background:

- FR 1014, followed by FR 1015; for students who have not previously studied French or have no completed Grade 12 (Core) French.
- FR 1034, followed by FR 1044; for students who have completed Grade 12 (Core) French.
- FR 1124, followed by FR 2154, FR 2164, FR 2174, or FR 2184;
- For Francophone students and for student who were educated in French. When FR 1124 is not offered, students will take FR 2154.
- FR 1184, followed by FR 1194.
- Primarily for students who have graduated from a French immersion program.
- FR 2034, followed by FR 2054.
- For students who have completed FR 1044 and for students whose background (some immersion, a period of time since their last French course, etc.) renders them too advanced for FR 1034 but who are not yet ready for FR 1184.

Please note: Students who have successfully completed a language course cannot subsequently receive credit for a course that occurs earlier in the sequence; e.g. students who have passed FR 1184 cannot take FR 1034 or FR 1015 for credit.

External Credit
Students may elect to take language courses off campus, e.g., in Summer French immersion programs. These courses can be counted for UNB credit if the Department judges that sufficient progress has been made to merit credit equivalent to a course offered by the the UNB French Department. The student is responsible for providing a detailed description of the course an other information the Department may require in order to assess it. It is required that students apply for the Department's

approval *before* taking a French course off campus for which they hope to receive UNB credit.

Normally, a maximum of 9 credit hours of transfer credits at the advanced level will be counted towards the Major or Honours Programs.

Upper Level Courses (first digits 3 or 4)

The Department offers upper level courses in three: Language, (second digit), Linguistics (second digit 2,3, or 4), and Literature (second digit 5,6, or 8).

Students working towards a Major or Honours degree in French are required to choose a number of specialized courses in Linguistics and in Literature. Students working towards a Major or Honours in another discipline who wish to continue the study of French may take any advanced-level French course, provided they have the necessary competence.

Linguistics
FR 3034 "Introduction to Linguistics" is a prerequisite or co-requisite for all Linguistics courses.

Literature
Literature courses are of three kinds:

  a) Courses offering a variety of critical approaches, not limited to France or Canada (second digit 5);
  b) Term courses on various periods of French European Literature (second digit 6);
  c) Term courses on aspects of French Canadian Literature (second digit 8).

Students are advised to check the timetable to see which courses are offered in the current session.

Majors
All Single and Double Major students must complete the required number of credit hours in upper level courses in French with a grade of C or better in each course.

Single Major: 36 credit hours
Double Major: 30 credit hours
Required Courses:

- FR 3404 - Introduction to Linguistics
- A minimum of one upper level Literature courses

Honours
All Single and Joint Honours students must complete the required number of credit hours in upper level courses in French with an average grade of B or better.

Single Honours: 42 credit hours
Joint Honours: 30 credit hours
Required Courses:

- FR 3404 - Introduction to Linguistics
- A minimum of one upper level Literature course.

Honours students may choose between the course-based option and the Honours report option.

Minor in French
Students must complete 24 credit hours in French including a minimum of 12 credit hours at the upper level. The upper level courses will include a minimum of 3 credit hours in either Literature or Linguistics. A grade of C or better is required in each course.

GENDER AND WOMEN'S STUDIES

Mailing Address:	c/o Faculty of Arts University of New Brunswick P.O. Box 4400, Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4655
Email:	carmen@unb.ca
Website:	http://www.unb.ca/fredericton/arts/idp/gws/index.html
Co-ordinator:	Dr. Carmen Poulin

FACULTY

- Jennifer Andrews, PhD, English
- Sandra Byers, PhD, Psychology
- Christa Canitz, PhD, English
- Wendy Churchill, PhD, History
- Lauren Cruikshank, PhD, Culture & Media Studies
- Tia Dafnos, PhD, Sociology
- Elizabeth Effinger, PhD, English
- Triny Finlay, PhD, English
- Nadia Francavilla, PhD, Culture & Media Studies
- Carmen Gill, PhD, MMFC/Sociology
- Anna Hamling, PhD, Culture and Media Studies
- Suzanne Hindmarch, PhD, Political Science
- Cathy Holtmann, PhD, MMRC/Sociology
- Bonnie Huskins, PhD, History
- Stefanie Hunt-Kennedy, PhD, History
- Sophie Lavoie, PhD, Culture and Media Studies
- Sabine Lebel, PhD, Culture and Media Studies

- Carolyn MacDonald, PhD, Classics & Ancient History
- Koumari Mitra, PhD, Anthropology
- Erin Morton, PhD, History
- Sasha Mullally. PhD, History
- Carmen Poulin, PhD, Psychology
- Edith Snook, PhD, English
- Luc Theriault, PhD, Sociology
- Lisa Todd, PhD, History
- Joanne Wright, PhD, Political Science

General Information
The Interdisciplinary Gender and Women's Studies Program, offers students the opportunity to focus on the experiences and achievements of women, with a view to gaining a more complete and balanced understanding of women's and men's lives, both historically and in contemporary society.

Eligibility
Admission to the introductory Gender and Women's Studies courses, GWS1003 and GWS 2003, is open to students in all Faculties and all years. Students in any Faculty may complete a Minor in Gender and Women's Studies. However, only students in Arts may take the Double Major or Joint Honours program; students will normally seek admission to the program from the Co-ordinator of Gender and Women's Studies after successfully completing 45 ch.

Programs of Study
Minor
A Minor consists of 24 ch of course work, selected in consultation with the Co-ordinator of Gender and Women's Studies. These include at least one of GWS 1003, Introduction to Gender and Women's Studies I and GWS 2003, Introduction to Gender and Women's Studies II; as well as GWS 4004, Seminar in Gender and Women's Studies, and an additional 18 ch at the upper level chosen from the list of core courses available from the Co-ordinator.

Double Major
A Double Major consists of 30 ch of course work, selected in consultation with the Co-ordinator of Gender and Women's Studies. These include at least one of GWS 1003, Introduction to Gender and Women's Studies I and GWS 2003, Introduction to Women's Studies II, as well as GWS 4004 Seminar in Gender and Women's Studies and an additional 24 ch at the upper level chosen from the list of core courses available from the Co-ordinator.

Joint Honours
The GWS portion of a Joint Honours programme consists of 36 ch of course work in GWS, selected in consultation with the Co-ordinator of Gender and Women's Studies. These 36 ch include:

1. at least one of GWS 1003, Introduction to Gender and Women's Studies I, and GWS 2003, Introduction to Women's Studies II;
2. GWS 4004, Seminar in Gender and Women's Studies;
3. GWS 4900, Honours Thesis in Gender and Women's Studies; and
4. 24 ch of upper level courses chosen from the list of core courses below,

If a student is completing Joint Honours in GWS and any another program requiring an Honours thesis, 6 credit hours of upper level or seminar courses may replace GWS 4900. Prior approval from the Co-ordinator of Gender and Women's Studies must be obtained.

Core Courses
ANTH 3114 Gender, Sex, and Cultures
ANTH 3704 South Asia
ANTH 4204 Gender, Kinship and Marriage
ANTH 4502 Issues in Medical Anthropology
ANTH 4702 Gender and Health
CCS/MAAC 3056 Queer Media & Culture
CCS 3062 Love and Religion: Latin American and Caribbean Women's Narrative from the Golden Age to the Beginning of the 20th Century
CCS 3072 Contemporary German Cinema and Media
CCS/SOCI 3668 Women, Creativity, and Nonviolence
CCS/MUS 3799 Women in Music
CCS 4062 Contemporary Spanish and Latin American Women Artists
CCS 4063 20th Century Women Writers
CLAS 3913 Gender and Power in Ancient Greece and Rome
ENGL 3883 Women's Writing in English
ENGL 3985 The Body in Literature
ENGL 3987 Fashioning the Nation
ENGL 5167 The American Sitcom and Feminist Theory
ENGL 5983 Women's Writing in the Atlantic World
FR 3534 Ecrits de femmes
FR 3834 Écrivaines québécoises contemporaines
FVI 3006 Intervention Strategies and Programs for People who Batter
FVI 3007 Religion and Family Violence
FVI 3634 Violence Against Women
HIST 3025 History and Sexuality
HIST 3326 Gender, Health, and Medicine
HIST 3625 Disability History
HIST 4001 Heretic and Witches in Europe (1350-1650)

HIST 4003 Women in the Early Modern Atlantic World
HIST 4012 Home Fronts at War
HIST 4313 History of Women in Canadian Society
HIST 4606 Gender, Race, and Disability in Colonial Contexts
HIST 4625 Gender & Slavery in the Atlantic World
MAAC 3055 Gender & Media
PHIL 3315 Hannah Arendt and Simone de Beauvoir
POLS 3441 Women Political Thinkers
POLS 3443 Feminist Issues in Political Thought
POLS 3447 Gender, Race and Global Politics
POLS 4722 Women, Gender, and Development
PSYC 3043 Human Sexuality
PSYC 3263 Psychology of Women
PSYC 3383 Women and Mental Health
PSYC 4223 Topical Seminar in Sex and Gender
SOCI 3006 Intervention Strategies and Programs for People who Batter
SOCI 3007 Religion and Family Violence
SOCI 3335 Religion, Gender and Society
SOCI 3543 Sociology of Gender Relations
SOCI 3634 Violence Against Women
SOCI 4336 Families, Law, and Social Policy
SOCI 4337 Legal Responses to Family Violence
ARTS 3000, Internship in Arts, when the placement is with an organization working on gender and women's issues, will count for credit in Gender and Women's Studies. In addition, some departments offer honours seminars that may be pertinent. Please consult the relevant department for more details. Please consult the Co-ordinator of Gender and Women's Studies for the most recent list of core courses. Because Minors are subject to University-wide regulations, Arts students seeking credit for Gender and Women's Studies courses outside their Faculty must ensure that they have Arts Faculty approval before they register for such courses.

HISTORY
DEPARTMENT OF HISTORY

General Office:	Tilley Hall, Room 120
Mailing Address:	Department of History, University of New Brunswick, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4621
Email:	history@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/history/
Chair:	Dr. Lisa Todd

FACULTY

- Brown, Cindy, BA Hons (UNB), MA (UNB), PhD (Western) Research Associate - 2018
- Brown, Jeffrey S., BA (St John Fisher, NY), MA (SUNY- Brockport), MA (York), PhD (Rochester), Associate Prof - 2002
- Churchill, Wendy, BA (Memorial), MA, PhD (McMaster), Associate Prof - 2006
- Corke, Sarah-Jane, BA, MA, (Guelph),PhD (UNB), Associate Prof - 2018
- Hunt-Kennedy, Stefanie, BA (Trent), MA (Guelph), PhD (Tor) - Assistant Prof - 2016
- Kennedy, Sean, BA (Memorial), MA, PhD (York), Prof – 1999
- Mancke, Elizabeth, BA (Colorado), MA (UBC), MA, PhD (Johns Hopkins), Canada Research Chair, Prof - 2012
- Morton, Erin, BA (Mount Allison), MA, PhD (Queen's), Prof - 2009
- Mullally, Sasha, BA, MA (Ottawa), PhD (Tor), Prof - 2009
- Todd, Lisa, BA (UNB), MA (London), PhD (Tor) - Assoc Prof - 2013
- Tozer, Angela, BA (Tor), MA (McGill), PhD (McGill) - Assistant Prof - 2020
- Waite, Gary K., BTh (Tyndale), BA, MA, PhD (Wat), Prof - 1987
- Windsor, Lee, BA (Acadia), MA (WLU), PhD (UNB), Assoc Prof - 2006

General Information
COURSE NUMBERING

- **1000-level courses**

   Courses at this level are suitable for students in their first or second year of University (i.e. in their first 60 ch) and are open to Arts students and non-Arts students. Subject to general regulations, these courses may also be taken for credit by students in the upper years of their programs. They are general-interest courses, designed to introduce students to specific topics, and to develop their skills in critical thinking and effective writing. Please note: students who are interested in pursuing a Major, a Minor or Honours in History, including students in their first year are encouraged to begin their studies in the discipline with a 2000-level foundation course, as discussed below.

- **2000-level courses**

  All history courses at this level are Foundation Courses, which are the recommended entry point into History for both first- and second-year students who are considering completing a Major, a Minor, or Honours in this discipline. These courses feature weekly discussion groups, which are limited in size and give students the opportunity to develop communication skills and critical thinking. These courses also provide students with experience in analyzing primary sources, assessing different historical interpretations of key problems, and writing research essays. Students planning to minor, major, or double-major in History or to complete an Honours degree are required to complete at least 6 ch at this level, and are strongly advised to complete at least 12 ch. Subject to general regulations, these courses may also be taken for credit by students in the upper years of their program. Courses taken at other institutions and presented to satisfy the Foundation course requirement must be approved by the Director of Majors or Honours.

- **3000-level courses**

  These courses are suitable for students who have completed at least 60 ch, both Arts and non-Arts students, and for History majors and non-majors.

- **4000-level courses**

  These courses are suitable for students who have completed at least 60 ch, both Arts and non-Arts students, and for History majors and non-majors. Students should normally have completed at least 6 ch in History before enrolling in a 4000-level course. The 4000-level courses employ the tutorial system and may have enrolment restrictions.

- **5000-level courses**

  These courses employ the seminar format and are normally open only to History Honours students, who must register for them in conjunction with the departmental Director of Honours. Students not enrolled in the History Honours program require permission of the Director of Honours and the course instructor before registering.

Courses for Credit from Cognate Disciplines
The following courses may be counted for advanced credit in the Department of History up to a maximum of 12 ch:

Classics
CLAS 3003 Ancient History: The Greeks from the Trojan War to Alexander the Great
CLAS 3033 Ancient History: The Romans from Republic to Empire
CLAS 3053 The Roman Army
CLAS 3063 Ancient Greek Warfare
CLAS 3073 Ancient History: Jewish Civilization from the Babylonian Exile to the Great Revolt
CLAS 3083 The Byzantine Empire
CLAS 3093 The Decline and Fall of the Roman Empire
CLAS 3623 Remembering War in Ancient Greece
CLAS 3803 The World of Jesus
CLAS 3813 The Early Church
CLAS 4063 Caesar Augustus

Economics
ECON 3017 Canadian Economics Development

Education
ED 5074 History and Philosophy of Education

Film
FILM 3082 History of the Canadian Cinema

German
CCS 3061 From Peoples to a Nation: German Culture before 1900
CCS 3071 Germany Today: German Culture from 1900 to the Present

Political Science
POLS 3242 Canadian-American Relations
POLS 3247 Trudeau's Canada
POLS 3251 Canadian Federalism
POLS 3441 Women Political Thinkers
POLS 3446 Subjects, Citizens, Individuals: Politics of the Early Modern World
POLS 4416 Canadian Political Thought
POLS 4495 Gender and War: Historical and Contemporary Perspectives

Recreation and Sports Studies
RSS 1042 History of Sport and Recreation
RSS 4024 Canadian History of Pucks, Parks and Playgrounds

History at St. Thomas University
UNB students are advised that upper level history courses offered at St. Thomas University, which are not offered at UNB, may be taken for credit by UNB students. Please see the St. Thomas University Calendar for course descriptions.

NOTE on Grading
The Department of History requires a "C" grade on individual courses to fulfil prerequisite and Majors requirements. All full-year History courses carry a 6 ch rating. Term courses carry a 3 ch rating.

Honours, Majors and Minors

Honours Program
Admission to the Honours Program in History is open to qualified students who have completed 60 ch of courses toward the BA degree and who have satisfied the Arts Faculty general requirements for the first and second year. Normally students will have completed 12 ch in History courses at the 1000 or 2000 level, including at least 6 ch in Foundation Courses as listed below. Students should apply for admission to the History Honours Program during their fourth term.
Each student's program of study must be approved by the departmental Director of Honours. The Director of Honours acts as advisor to the Honours students in the selection of courses.

- **Single Honours**

  Single Honours students normally take 42 ch of upper level History courses. A minimum of 24 ch of these must be at the 5000-level and must include History 5901 (3 ch). The 5000-level seminars must be chosen from at least two fields of History. The remaining 18 ch of upper level courses must be at the 3000 or 4000 level.

- **Joint Honours**

  A student reading for Honours in History jointly with another subject must take at least 24 ch of advanced-level History courses of which 12 ch must be seminars.

Majors Program
The Director of the Majors Program in History is the advisor of all students in the Majors, Double Majors, and Minors programs in History. In selecting courses, students should consult with the Director, who must approve all Majors, Double Majors, and Minor programs. A student transferring from another faculty into Arts and intending to Major in History, or changing from another Major into History, may do so only with the permission of the Dean of Arts and the Department of History.
A Major in History requires the completion of 42 ch of History courses, with a grade of C or better in each. The specific requirements are as follows:
i. At least 6 ch must be in Foundation Courses (12 ch of Foundation Courses is recommended).
ii. No more than 18 ch at the 1000 or 2000 level, and at least 24 ch at the 3000 or 4000 level.
iii. At least 6 of the 42 ch of history courses must deal with history before 1800.
The departmental Director of Majors must approve the program of every Majors student.

Double Majors
A Double Major in History requires the completion of 36 ch of History courses, with a mark of C or better in each. At least 6 ch must be in Foundation courses. At least 24 ch of History courses must be completed at the 3000 and 4000 level. Pre-1800 course coverage is not required of Double Majors. The departmental Director of Majors must approve the courses for the History component of the Double Major.

Minor Program
A Minor in History requires the completion of 12 ch of History at the 1000 or 2000 level, at least 6 ch of which must be in Foundation Courses. This must be followed by an additional 12 ch at the 3000 or 4000 level. A total of at least 24 ch of History courses must be completed. A grade of C or better in each individual course is required for the Minor. The departmental Director of Majors must approve the courses for the Minor.

INTERNATIONAL DEVELOPMENT STUDIES

Mailing Address:	International Development Studies Program c/o Faculty of Arts University of New Brunswick P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4826
Email:	IDS@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/ids
Co-ordinator:	Dr. Thom Workman

FACULTY
- Koumari Mitra, Professor (Anthropology)
- Daniel Tubb, Associate Professor (Anthropology)
- Anna Hamling Associate Professor (Critical Cultural Studies)
- Sophie Lavoie, Associate Professor (Critical Cultural Studies)
- Murshed Chowdhury, Associate Professor (Economics)
- Constantine E. Passaris, Professor (Economics)
- Stephanie Hunt-Kennedy, Associate Professor (History)
- Suzanne Hindmarch, Associate Professor (Political Science)
- Thom Workman, Professor, (Political Science)
- Tia Dafnos, Associate Professor (Sociology)
- Cathy Holtmann, Associate Professor (Sociology)
- Lucia Tramonte, Professor (Sociology)

General Information
The IDS program is administered by the IDS Coordinator and includes faculty members from various Faculty of Arts departments. The IDS

program offers its own core courses, and relies on other departments for supporting courses.

Tier 1	Tier 2	Tier 3
IDS 1103 3 ch	Chosen from the list of courses below.	Chosen from a list of courses available annually from the IDS program.
IDS 2103 3 ch		
IDS 4103 3 ch		
IDS 4203 3 ch		
IDS 4900 3 ch		

Tier 2 coursers are core courses offered on a rotational basis by the IDS-supporting departments. Course availability changes yearly. For scheduling, please search the UNB Undergraduate Timetable, and consult the IDS program advisor.

Discipline	Course	Course Description
Anthropology	ANTH 3694	Latin America
	ANTH 3704	South Asia
	ANTH 4502	Issues in Medical Anthropology
	ANTH 4702	Gender and Health
Comparative Cultural Studies	CCS 3455	Latin America in Cinema
	CCS 3974	Contemporary Spanish American Narrative
	CCS 3904	Background of Latin American Cultures
	CCS 4062	Spanish and Latin American Women Artists
Economics	ECON 3016	Introduction to Development Economics
	ECON 3705	Canada and the New Global Economy
English	ENGL 3813	Literatures of Africa, Caribbean and South Asia
History	HIST 3011	Age of Empires
	HIST 3012	Empires in Crisis
Political Science	POLS 3635	The Critical Study of War
	POLS 3643	The United Nations
	POLS 3711	Political Economy of Development in Africa
	POLS 3713	The Global Economy: Production, Profits, Power and People
Sociology	SOCI 3523	Sociology of International Development
	SOCI 3563	Global Perspectives in Environmental Health
	SOCI 3801	Food Studies in Sociological Context
	SOCI 4264	Health Care in International Context

Tier 3 courses are on topics of interest to IDS students and can be used to complete program electives. Course availability changes yearly. For scheduling, please search the UNB Undergraduate Timetable, and consult the IDS program advisor.

Students can undertake a Minor, Double Major or Joint Honours, combining IDS with a disciplinary degree program in the Faculty of Arts. A Minor in International Development Studies can be taken by any UNB student. For information on the Minor, Double Major and Joint Honours, see the BA General Regulations.

Admission into the Double Major or Joint Honours program is open to any student who has successfully completed 60 credit hours towards the BA degree; students require a minimum GPA of C+ (2.3) for admission to the Joint Honours program. Students considering International Development Studies as part of a Double Major or Joint Honours program should consult with the Coordinator.

Inquiries about the International Development Studies program should be directed to Dr. Thom Workman, Coordinator of International Development Studies, and (506) 453-4826. E-mail wworkman@unb.ca.

Program of Study

A grade of C (2.0) or better in each individual course used for IDS credit is required for Minors and Double Majors; students in Joint Honours program require a grade of C+ (2.3) or better on each individual course used for IDS credit.

Minors

For a Minor in International Development Studies a student must complete the following courses for a total of 24 ch:

- IDS 1103 Introduction to Development Studies: Global Perspectives on Human Inequality (3 ch)
- IDS 2103 Institutions, Practices and Perspectives on International Development (3 ch)
- 18 ch of courses approved for IDS credit. 12 ch must be at the upper level.

Double Majors

Double Majors taking International Development Studies must complete the following for a total of 30 ch:

- IDS 1103 Introduction to Development Studies: Global Perspectives on Human Inequality (3 ch)
- IDS 2103 Institutions, Practices and Perspectives on International Development (3 ch)
- IDS 4103 Advanced Topics in International Development Studies (3 ch)
- IDS 4203 Development Project Design (3 ch)
- 18 ch from Tier 2 and Tier 3 course lists, of which at least 9 ch will be from the Tier 2 course list

Joint Honours

Joint Honours taking International Development Studies must take the following courses, for a total of 36 ch:

- IDS 1103 Introduction to Development Studies: Global Perspectives on Human Inequality (3 ch)
- IDS 2103 Institutions, Practices and Perspectives on International Development (3 ch)
- IDS 4103 Advanced Topics in International Development Studies (3 ch)
- IDS 4203 Development Project Design (3 ch)
- IDS 4900 Honours Thesis in International Development Studies (6 ch) *
- 18 ch from Tier 2 and Tier 3 course lists, of which at least 9 ch will be from the Tier 2 course list

* The Honours Thesis in IDS (IDS 4900) is compulsory only for students who do not have to write an Honours Thesis in the other discipline of their Joint Honours program. Students completing an Honours Thesis in another program will instead be required to complete an additional 6 ch of upper level IDS electives approved by the IDS Advisor.
Upon registration in IDS 4900, the student must identify a thesis supervisor from the list of IDS affiliated faculty members and develop a thesis proposal. A copy of the thesis proposal must be provided to the Coordinator.
Please note that those students who are required to complete both an Honours thesis in a departmental discipline and one in IDS cannot have the same supervisor for both.

LAW IN SOCIETY

Mailing Address:	Law in Society Program c/o Department of Sociology University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada E3B 5A3
Phone:	(506) 453-4849
Email:	socio@unb.ca
Website:	http://www.unb.ca/fredericton/arts/dp/lawinsociety/
Co-ordinator:	Dr. Tia Dafnos

FACULTY
Consulting Committee:

- Dr. Jason Bell (PHIL), BA (Oklahoma City), PhD (Vanderbilt)
- Dr. Tia Dafnos (SOCI), BA (U of T) MA, PhD (York)
- Professor Dorothy Duplessis (ADM), BComm, LLB, MBA (Dal), LLM (Lond)
- Dr. David Hofmann (SOCI), BA (Western), MSc (Montr), PhD (Waterloo)
- Dr. Ted McDonald (ECON), BA (St. F.X.), Mcom, PhD (Melbourne)
- Dr. Scott Ronis (PSYC), BA (Brandeis), MA, PhD (Missouri)

General Information

Law in Society is an interdepartmental and inter-faculty program involving the Faculties of Administration and of Law, the Muriel McQueen Fergusson Centre for Family Violence Research and, in the Faculty of Arts, the departments of Anthropology, Classics and Ancient History, Economics, History, Philosophy, Political Science, Psychology, and Sociology.
Based on the premise that law and the character and quality of society are interrelated, the program offers a critical academic examination of the role of law in society and of society in law. Students will study these issues from at least three disciplinary perspectives and may include in their studies examinations of the philosophic, historic, economic, political, and social foundations of law. All of the courses explore one common theme: the connections between law and the social order.

Eligibility

Admission to the Law in Society Program is open to students who have successfully completed sixty credit hours toward a degree in the Faculty of Arts or the Faculty of Business Administration. Students must obtain the approval of the department (Arts) or faculty (Administration) in which they major and then apply through the LWSO Coordinator for admission to the Law in Society Program. Students should apply during the registration period or immediately thereafter. With permission of the Coordinator, students may count for credit in a LWSO Program courses taken before they enter the Program. A grade of C or better is required for credit in the Law in Society Program. Although not a requirement,

students are encouraged to complete PHIL 1101 Critical Thinking before entry into the Program.

Programs of Study

Double Major

The Law in Society Double Major consists of 30 ch, which must include LWSO 2003 and LWSO 4003. Students will choose an additional 24 ch from the core and elective course lists. Of these, 9 ch shall be chosen from at least 2 disciplines (other than LWSO) among the core courses. Additional core courses may be counted as electives. At least 24 ch shall be upper level courses (3000 level or above). A grade of C or better is required for course credit in the Law in Society Double Major Program.

Joint Honours

Students intending to complete a Joint Honours must apply in writing to the LWSO Coordinator for admission. Normally, students wishing to complete a Joint Honours will apply prior to the start of their 3rd year and have a GPA of at least 3.3 or B+. A Joint Honours consists of 36 ch including completion of the requirements for a Double Major and completion of either (a) 6 ch of 4000 level courses from the core or elective lists, approved by the LWSO Coordinator, OR (b) completion of LWSO 5000, the Honours Thesis in Law in Society. A grade of C or better is required for course credit in the Law in Society Joint Honours Program.

Minor

The Law in Society Minor consists of 24 ch, which must include LWSO 2003. Students will choose an additional 21 ch from the core and elective course lists. Of these, 9 ch shall be chosen from at least 2 disciplines (other than LWSO) among the core courses. At least 18 ch shall be upper level courses (3000 level or above). A grade of C or better is required for course credit in the Law in Society Minor Program.

Core and Elective Courses

Program Courses	Core Courses	Elective Courses
LWSO 2003 Law and Society (3 ch)	ADM 3123 Business Law I (3 ch) (UNBSJ:BA 2703)	ARTS 3000 Faculty of Arts Internship (6 ch) *Consult LWSO Coordinator
LWSO 4003 Seminar in Law and Society (3 ch)	ADM 4826 Employment Law I (3 ch)	ADM 3124 Aboriginal Business Law (3 ch)
LWSO 5000 Honours Thesis in Law and Society (6 ch)	CLAS 3923 Roman Law (3 ch)	ADM 3875 Labour Relations (3 ch)
	ECON 3845 Introduction to Law and Economics (3 ch)	ADM 4125 Business Law II (3 ch)
	HIST 4851 Law and War (3 ch)	ADM 4718 Technology, Security and Risk (3 ch)
	PHIL 3331 Michel Foucault's Discipline and Punish: The Birth of the Prison (3 ch)	ADM 4827 Workplace Health and Safety (3 ch)
	POLS 2202 Canadian Politics (3 ch)	ADM 4878 Negotiation and Dispute Resolution (3 ch)
	POLS 3251 Canadian Federalism (3 ch)	ANTH 2101 Foundations of Socio-Cultural Anthropology (3 ch)
	POLS 3257 Law and Politics in Canada (3 ch)	ANTH 3523 Forensic Anthropology (3 ch)
	PSYC 3263 Psychology of Criminal Behaviour (3 ch) (UNBSJ ONLY)	ANTH 3662 Canada's First Nations (3 ch)
	PSYC 3343 The Psychology of Crime (3 ch)	ANTH 4204 Gender, Kinship, and Marriage (3 ch)
	SOCI/CRIM 1603 Introduction to Criminology (3 ch)	ANTH 4244 Ethnopolitics and Identity (3 ch)
	SOCI/CRIM 3613 Theories and Perspectives in Criminology (3 ch)	CCS 3054 Crimes and Misdemeanors (3 ch)
	SOCI/CRIM 3636 Restorative Justice (3 ch)	CCS/SOCI 3666 Icons of Non-violence I (3 ch)
	SOCI/CRIM 4336 Families, Law and Social Policy (3 ch)	CCS/SOCI 3667 Icons of Non-Violence II (3 ch)
	SOCI/CRIM 4337 Legal Responses to Family Violence (3 ch)	CCS/SOCI 3668 Women, Creativity, and Nonviolence (3 ch)
	SOCI/CRIM 4355 Sociology of Law (3 ch)	COMS 3005 Intellectual Property and the Information Commons (3 ch) (UNBSJ)
		ECON 3905 Contemporary Issues in the Canadian Economy (3 ch)
		ECON 5835 Industrial Organization: Policy (3 ch)
		GWS 1003 Introduction to Gender and Women's Studies I (3 ch)
		GWS 2003 Introduction to Gender and Women's Studies II (3 ch)
		GWS 4004 Seminar and Women's Studies (3 ch)
		HIST 3015 Racism in the West from Antiquity to the Enlightenment (3 ch)
		HIST 3016 Racism in the West from Enlightenment to Today (3 ch)
		HIST 3331 The Canadian Worker to 1914 (3 ch)
		HIST 3322 The Canadian Worker since 1914 (3 ch)
		HIST 3355, Nature, Culture and the Canadian Environment (3 ch)
		HIST 3374 Truth & Reconciliation in Canada: Working to Overcome the Legacy of Residential Schools (3 ch)
		HIST 3378 First Nations and Canadian Settler Society I: Pre-Contact to the 1876 Indian Act (3 ch)
		HIST 3379 First Nations and Canadian Settler Society II: The 1876 Indian Act to the 2008 Apology for Residential Schools (3 ch)
		HIST 3408 American Radicalism and Reform (3 ch)
		HIST 3413 African America (3 ch)
		HIST 3414 Imperial America (3 ch)
		HIST 3418 North American Slavery (3 ch)
		HIST 3475 Removal, Allotment, Termination, Self-Determination: American Indian Policy, 1824-2004 (3 ch)
		HIST 3808 History of the Canadian Forces, 1953 - Present (3ch)
		HIST 4001 Heretics and Witches in Europe, 1350 – 1650 (3 ch)
		HIST 4003 Women in the Early Modern Atlantic World (3 ch)
		HIST 4013 The Holocaust: Victims, Perpetrators, Bystanders (3 ch)
		HIST 4341 History of the Atlantic Provinces to Confederation (3 ch)

		HIST 4342 History of the Atlantic Provinces after Confederation (3 ch)
		HIST 4351 New Brunswick, 1784-1860 (3 ch)
		HIST 4352 New Brunswick, 1860 to the Present (3 ch)
		HIST 5312 Native Peoples and Canadian and American State Policy, 1824-1982 (3 ch)
		PHIL 1101 Critical Thinking (3 ch)
		PHIL 1201 Ethics of Life and Death (3 ch)
		PHIL 3101 Introduction to Symbolic Logic (3 ch)
		PHIL 3205 Contemporary Ethical Theory (3 ch)
		PHIL 3262 Applied Professional Ethics (3 ch)
		PHIL 3302 Later Greek Philosophy (3 ch)
		PHIL 3315 Hannah Arendt and Simone de Beauvoir (3 ch)
		PHIL 3601 Liberalism and Its Critics (3 ch)
		POLS 2503 Women and Politics (3 ch)
		POLS 3103 Rights in Conflict in North America (3 ch)
		POLS 3213 Capitalism, Canada and Class (3 ch)
		POLS 3247 Trudeau's Canada (3 ch)
		POLS 3415 Liberalism (3 ch)
		POLS 3447 Gender, Race and Global Politics (3 ch)
		POLS 3614 Ethics and International Politics (3 ch)
		POLS 3718 International Security in Theory and Practice (3 ch)
		POLS 3743 Drugs and Behaviour (3 ch) (UNBSJ: PSYC 2752) (UNBF: formerly PSYC 3023)
		SOCI/CRIM 2015 Introduction to Canadian Criminal Justice System (3 ch)
		SOCI/CRIM 2563 Violence and Society (3 ch)
		SOCI/CRIM 2575 Terrorism (3 ch)
		SOCI/CRIM 2603 Sociology of Deviance (3 ch) (UNBSJ: SOCI 2603)
		SOCI/CRIM 2613 Youth Justice (3 ch)
		SOCI/CRIM 2663 Social Perspectives in Victimology (3 ch)
		SOCI 3006 Intervention Strategies and Programs for People who Batter (3 ch)
		SOCI 3007 Religion and Family Violence (3 ch)
		SOCI/CRIM 3385 Sociology of Policing & Security (3 ch)
		SOCI 3605 International Human Rights (3 ch)

		SOCI/CRIM 3623 White Collar Crime (3 ch)
		SOCI/CRIM 3634 Violence Against Women (3 ch)
		SOCI 3635 Conflict Resolution (3 ch)
		SOCI/CRIM 3662 Understanding Genocide (3 ch)
		SOCI/CRIM 4301 Topics in Criminology & Socio-legal Studies (3 ch)
		SOCI/CRIM 4585 Organized Crime (3 ch)

MEDIA ARTS & CULTURES

General Information

Media Arts & Cultures is an interdisciplinary program that combines the study of media forms, texts, and contexts with a hands-on approach to creativity and technology. In this program, students learn about media by making media. They not only consider, critique, and engage intellectually with media, but also learn tools and techniques with which media content is created today. In Media Arts & Cultures, we blur the line between critical consumers and creative producers, between scholars of media and authors of media.

Honours, Majors, and Minors

Students interested in Media Arts & Cultures have the following five options

- Honours in Media Arts & Cultures
- Honours in Media Arts & Cultures (Film Production)
- Major in Media Arts & Cultures
- Major in Media Arts & Cultures (Film Production)
- Minor in Media Arts & Cultures

Honours programs are for students who are interested in a concentrated course of study (typically in preparation for further studies). The Film Production options are designed to allow students with an interest in filmmaking to focus their MAAC elective courses in this area. All students electing the Film Production option still complete all of the core courses for the general Media Arts & Cultures program. The Minor consists of 24 ch of MAAC courses for students majoring in other disciplines. Joint Honours and Double Majors with Media Arts & Cultures are also possible.

Honours

Admission to the Honours Program in Media Arts & Cultures is open to qualified students who have completed 45 ch of courses toward the BA degree. Normally students will have completed (or be in process of completing) 12 ch in lower level MAAC courses. Students should apply for admission to the Media Arts & Cultures Honours Program in their fourth term. Students may enter the program during their third year, if they qualify.

To be admitted to Honours, the student must have achieved an average of 3.3 (B+) in their Media Arts & Cultures courses. Also, an average of 3.3 in MAAC courses and of 2.5 in non-MAAC courses must be maintained if the student is to retain Honours standing.

Each student's program of study must be approved by the Media Arts & Cultures Program Advisor.

Single Honours Requirements

- 3.3 GPA in MAAC courses and a 2.5 GPA in non-MAAC courses
- 12 ch of 1000- level and 2000-level MAAC courses (including at least MAAC 2021)
- 42 ch of Advanced level MAAC courses.
  - These must include MAAC 3021 and either MAAC 5000 (Honours Thesis) or MAAC 5980 (Honours Project).

Joint Honours Requirements

A student completing Honours in Media Arts & Cultures jointly with another subject follows the same requirements as Single Honours but may reduce the overall number of advanced level ch in MAAC courses to 30.

Honours in Media Arts & Cultures (Film Production)

The Department offers students wishing to concentrate in film production the following Honours option: Media Arts & Cultures (Film Production). The requirements for this program are:

- 3.3 GPA in MAAC courses and a 2.5 GPA in non-MAAC courses
- MAAC/FILM 2999 & MAAC 2022
- An additional 6 ch of Introductory and Intermediate level MAAC courses (chosen from MAAC 1001, MAAC 1002, MAAC 1021, MAAC 2021)
- 42 ch of advanced level MAAC courses
  - These must include MAAC 3021, MAAC 4000, 6 ch from the approved Film Production course list (List A below), 6 ch from the approved Film Studies course list (List B below), and

either MAAC 5000 (Honours Thesis) or MAAC 5980 (Honours Project).

Students considering this option should discuss their plans with the Media Arts & Cultures Program Advisor when they apply for admission to the Honours program. All students following the Film Production option must have their course of study approved by the Media Arts & Cultures Program Advisor.

List A
FILM/ENGL 3183 Creative Writing: Screenwriting for Short Formats (this is a limited enrolment course)
FILM/ENGL 3186 Creative Writing: Feature Screenplay (this is a limited enrolment course)
MAAC/FILM 3981 Screen Acting
MAAC/FILM 3998 Film Production
MAAC 4401 Animation Principles
List B
FILM/ENGL 3903 Film Theory
FILM/ENGL 3907 Film Genre
FILM/ENGL 3908 Zombies in Film
FILM/ENGL 3916 Canadian Film since 1967
FILM/ENGL 3917 National Cinemas
FILM/ENGL 3918 The French New Wave
MAAC/CCS 3065 The Thrill of Fear: Horror Narratives across Media & Cultures
MAAC/FILM 3075 Framing Reality: Theory and Practice of Documentary Media
MAAC 3085 Television Studies
MAAC/CCS 3066 Trauma and Seduction: Early German Cinema
MAAC/CCS 3072 (Re) constructing National Identity: Contemporary German Cinema
MAAC/CCS 3082 History of Canadian Cinema
CCS 3455 The Cinema of Spain
CCS 3546 Latin America Cinema
MAAC/CCS 3795 Dark Futures: Visions of Dystopia since World War I

Major in Media Arts & Cultures
A major in Media Arts & Cultures requires the completion of 42 ch of MAAC courses, with a grade of C or better in each. The specific requirements are as follows:

Single Major Requirements

- 12 ch of Introductory and Intermediate level MAAC courses (including MAAC 2021)
- 30 ch of upper level MAAC courses (including MAAC 3021).

Double Major Requirements
A student completing a Double Major in Media Arts & Cultures jointly with another subject follows the same requirements as for a Single Major but may reduce the required number of Advanced level ch in MAAC courses to 24.

Optional Majors Program: Media Arts & Cultures (Film Production)
The Department offers students wishing to concentrate in film production the following Major option: Media Arts & Cultures (Film Production). The requirements for this program are:

- MAAC/FILM 2999 & MAAC 2022
- An additional 6 ch of Introductory and Intermediate level MAAC courses (chosen from MAAC 1001, MAAC 1002, MAAC 1021, or MAAC 2021)
- 30 ch of advanced level MAAC courses
  - These must include MAAC 3021, MAAC 4000, at least 6 ch from the approved Film Production courses list (List A below), and at least 6 ch from the approved Film Studies course list (List B below)

Students considering this option should discuss their plans with the Media Arts & Cultures Program Advisor when they declare their major. All students following the Film Production option must have their course of study approved by the Media Arts & Cultures Program Advisor.

List A
FILM/ENGL 3183 Creative Writing: Screenwriting for Short Formats (this is a limited enrolment course)
FILM/ENGL 3186 Creative Writing: Feature Screenplay (this is a limited enrolment course)
MAAC/FILM 3981 Screen Acting
MAAC/FILM 3998 Film Production
MAAC 4401 Animation Principles
List B
FILM/ENGL 3903 Film Theory
FILM/ENGL 3907 Film Genre
FILM/ENGL 3908 Zombies in Film
FILM/ENGL 3916 Canadian Film since 1967
FILM/ENGL 3917 National Cinemas
FILM/ENGL 3918 The French New Wave
MAAC/CCS 3065 The Thrill of Fear: Horror Narratives across Media & Cultures
MAAC/FILM 3075 Framing Reality: Theory and Practice of Documentary Media

MAAC 3085 Television Studies
MAAC/CCS 3066 Trauma and Seduction: Early German Cinema
MAAC/CCS 3072 (Re) constructing National Identity: Contemporary German Cinema
MAAC/CCS 3082 History of Canadian Cinema
CCS 3455 The Cinema of Spain
CCS 3546 Latin American Cinema
MAAC/CCS 3795 Dark Futures: Visions of Dystopia since World War I
Minor in Media & Arts Cultures
The Minor in Media Arts & Cultures consists of at least 24 ch in MAAC completed with a grade of C or better. MAAC 2021 and MAAC 3401 are required. At least 6 ch, and no more than 12 ch, must be from 1000-level and 2000-level courses. Students should note that any courses compulsory for their degree programs cannot be counted toward a Minor. Students transferring credits from another university should note that at least half the credits counted towards a UNB Minor in MAAC must be from courses taken at the University of New Brunswick.

MUSIC

Minor in Music
General Information
The Music Minor offers students from all Faculties the opportunity to study music from a variety of perspectives, including theory, history, and analysis, and performance, among others. It is designed so as to create rich learning experiences for students interested in making music as well as for those primarily interested in learning about music. For details of courses and requirements, see below.
Eligibility
Admission to the Music Minor is open to students from any Faculty who have completed 30 ch towards a degree. Students should contact the Director of Music for program approval and advising. Students are encouraged to begin the Minor in their second year of study.
Program of Study
The Minor consists of 24 credit hours approved by the Director. Of these 24 ch, at least 12 ch must be at the upper level. All students are required to take at least one of the following theory-based courses: MUS 2113, MUS 2114, MUS 2123, or MUS 2124, and at least one of the following history-based courses: HIST/MUS 3775, HIST/MUS 3785, HIST/MUS 3795, or HIST/MUS 3796. For the remainder of the courses, students are expected to consult with the Director of Centre for Musical Arts to ensure a coherent set of courses is selected to reflect a distinct area of concentration. Students wishing to focus on performance will typically take at least 12 ch from performance and theory based courses, while students primarily interested in the history and appreciation of music will typically take at least 12 ch from courses in those areas.
Courses will be selected from the following list. Additional courses may be counted towards the Minor subject to the approval of the Director.
MUS 2113 Introduction to Music
MUS 2114 Introduction to Music Appreciation
MUS 2123 Music Theory I
MUS 2124 Music Theory II
MUS 2143 Introduction to Jazz Theory
MUS 2797 Rock and American Popular Music
MUS 3000 Studio Work
MUS 3001 Studio Work: Private Lessons
MUS 3002 Studio Work: Ensemble Work
MUS 3113 Computer in Music, an Introduction
MUS 3123 Musical Composition
MUS 3133 Conducting
MUS 3797 Music of Canada
MUS 3798 Canadian Jazz: The Forbidden, the Rebellious, and the Misunderstood
HIST 3701 The Cultural Turn: Cultural Studies in Historical Context
HIST/MUS 3765 History of Music in Medieval and Renaissance periods
HIST/MUS 3775 History of Music in the Late Baroque and Classical Period
HIST/MUS 3785 History of Music in the Romantic Era
HIST/MUS 3795 History of Music in the Twentieth Century
HIST/MUS 3796 History of Music Dramas of Richard Wagner
MUS/CCS 3799 Women in Music
MAAC 3362 Sound Design
POLS 3417 Politics and Music
SOCS 3472 Sociology of Music
CCS 3023 Berlin to Broadway

PHILOSOPHY

DEPARTMENT OF PHILOSOPHY

General Information:	Carleton Hall, Room 209
Mailing Address:	Department of Philosophy University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada E3B 5A3

Phone:	(506) 453-4762
Fax:	(506) 447-3072
Email:	phil@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ philosophy/index.html
Chair:	Dr. Robert A. Larmer

FACULTY

- Bell, Jason, BA (Oklahoma City), PhD (Vanderbilt), Assist Prof - 2016
- Frooman, Jeffrey, BS, BA (Illinois), MBA (Michigan), MA, PhD (Pittsburgh), Prof - 2000
- Larmer, Robert A., BA (Car), MA, PhD (Ott), Prof - 1986
- Weed, Jennifer Hart, BSc (UWO), PhD (SLU), Assoc Prof - 2008
- Weed, Ronald, BA (BC), MA (UT), MTS (Regis), PhD (SLU), Assoc Prof - 2008

General Information
Prerequisites
Any course in Philosophy may be taken in any year, provided that the *Prerequisites* for the course have been met, and subject to the regulations of the student's degree program. The following list gives the general *Prerequisites* for Philosophy courses at each level:
1000 Courses: General introductory courses.
2000 Courses: Courses in specific areas of the subject. They have no formal *Prerequisites*, and are often taken by students beginning with a subject, have a special interest, or other reasons for taking them. They may be taken by first year students.
3000 Courses: Open to students in the second year of their studies or above, or others with the permission of the instructor.
4000 Courses: 6 ch in Philosophy, or the permission of the instructor, is prerequisite.

Minors, Majors and Honours
Minors
The following Minors programs in Philosophy may be taken by students in any degree program. A grade of C or better is required in each course.

1. A Minor in Philosophy will consist of two 1000 level courses and another 18 ch in Philosophy that must include at least 12 hours at the upper division level.
2. A Minor in Ethics consists of two 1000- or 2000- level courses, an ethical theory course (e.g., PHIL 2201, PHIL 3205, or PHIL 3264), and 15 credit hours selected from PHIL 1201, PHIL 2201, PHIL 3204, PHIL 3205, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3262, PHIL 3264, PHIL 3302, PHIL 3308, PHIL 3315, PHIL 3332, PHIL 3404. At least 12 ch must be taken at the upper level.
3. A Minor in the History of Philosophy will consist of PHIL 1301, PHIL 1302, and 18 ch chosen from PHIL 3301, PHIL 3302, PHIL 3303, PHIL 3304, PHIL 3305, PHIL 3306, PHIL 3308, PHIL 3311, PHIL 3312, PHIL 3313, PHIL 3315, PHIL 3317, PHIL 3331. Certain courses in the Department of Philosophy at STU may also be included with the approval of this Department.

Minor in Ancient Philosophy
Students may minor in Ancient Philosophy by completing 24 ch of courses offered by the Department of Classics & Ancient History and the Department of Philosophy. For Classics (CLAS) departmental course descriptions, please consult that department's calendar listing.
Students are required to complete 24 ch as follows:
a. 6 ch of introductory philosophy chosen from PHIL 1101, PHIL 1201, PHIL 1301, PHIL 1302, PHIL 1401.
b. 6 ch of ancient language: GRK 1203/ GRK 1213 or LAT 1103/ LAT 1113 or any other 6 ch of Greek and/or Latin.
c. 6 ch of advanced philosophy courses, including at least one of PHIL 3301, PHIL 3302, PHIL 3306, PHIL 3308, PHIL 3311.
d. 6 ch of advanced classics (CLAS) courses, including at least one of CLAS 3703, CLAS 3723 and CLAS 3733.

Majors:
Students in the BA degree program who wish to take a Major in Philosophy, either singly or with some other subject, should consult with the Major/Honour advisor of the Philosophy Department.

- **Single Major:** A Major in Philosophy will consist of 36 credit hours that include the following core courses: PHIL 1301, PHIL 1302, and either PHIL 1101 or PHIL 3101. These 36 credit hours must also include 24 credit hours of upper level courses (3000 and above), and 3 credit hours that may be taken at the 1000, 2000, 3000, or 4000 level. The upper level courses should include at least one course from each of the three streams of ethics, history of philosophy and metaphysics/epistemology. Students must be earn an overall average of B- or above in those upper level courses that count towards the minimal requirements of the Major. Students may include no more than one course in applied ethics (e.g., PHIL 3204*, PHIL 3209, PHIL 3208, PHIL 3207, PHIL 3261*, PHIL 3262, or PHIL 3211) among the upper level Philosopy courses counting towards the Major, except with the approval of the undergraduate advisor or Department Chair.

- **Double Major**: The requirements are as for the single Major, except the Double Major requires 33 credit hours, and it requires 21 credits of advanced courses (3000 and above).

Students qualifying for a degree other than the BA, who meet the above requirements for a Major in Philosophy, may request the Registrar to note this fact on their transcript.

Honours
Students in the BA degree program who wish to take Honours in Philosophy must consult with the Major/Honours advisor of the Philosophy Department.

- **Single Honours:** Students taking Honours in Philosophy must complete 48 credit hours that include the following core courses: PHIL 1301, PHIL 1302, and either PHIL 1101 or PHIL 3101. (Honours students are strongly encouraged to take PHIL 3101). These 48 credit hours must also include 36 credit hours of upper level courses (3000 and above), and 3 credit hours that may be taken at the 1000, 2000, 3000, or 4000 level. At least one course from each of the four streams of logic, ethics, history of philosophy and metaphysics/epistemology must be taken. With the approval of the Department, up to 12 ch in related courses in other departments may be counted as credit hours in Philosophy. Students must obtain on overall average of at least a B in the upper level Philosophy courses counting towards their Honours requirements in Philosophy. Students may include no more than one course in applied ethics (e.g., PHIL 3204*, PHIL 3209, PHIL 3208, PHIL 3207, PHIL 3261*, PHIL 3262, PHIL 3211) among the upper level Philosophy courses counting towards the Honours degree, except with the approval of the undergraduate advisor or Department Chair.

- **Joint Honours:** PHIL 1301 and PHIL 1302 and 24 credit hours in advanced courses in Philosophy. At least one course from each of the four streams of logic, ethics, history of philosophy and metaphysics/epistemology must be taken. With the approval of the Department, up to 12 ch in related courses in other departments may be counted as credit hours in Philosophy.

a. Courses in Logic
PHIL 1101 Critical Thinking
PHIL 3101 Introduction to Symbolic Logic

b. Courses in Ethics or Social Philosophy
PHIL 1201 Ethics of Life and Death
PHIL 2201 Introduction to Ethics
PHIL 2207 Ethics for Engineers Online Only
PHIL 3204 Business Ethics
PHIL 3205 Contemporary Ethical Theory
PHIL 3208 Ecological Ethics
PHIL 3209 Health Care Ethics in Canada
PHIL 3211 Cyber Ethics
PHIL 3261 Military Ethics
PHIL 3262 Applied Professional Ethics
PHIL 3264 Ethics

c. Courses in the History of Philosophy
PHIL 1301 Introduction to the History of Philosophy I
PHIL 1302 Introduction to the History of Philosophy II
PHIL 3301 Early Greek Philosophy
PHIL 3302 Later Greek Philosophy
PHIL 3303 Modern Philosophy I
PHIL 3304 Modern Philosophy II
PHIL 3305 Capitalism vs. Communism
PHIL 3306 Kierkegaard, Nietzsche, and the Roots of Postmodernism
PHIL 3308 Plato's Republic
PHIL 3311 Nietzsche on Socrates' Death-Wish
PHIL 3312 Infinity: Emmanuel Levinas' Encounter with the Other
PHIL 3313 Reason vs. Faith: The Philosophy of Kierkegaard
PHIL 3315 Hannah Arendt and Simone de Beauvoir
PHIL 3317 Jean-Paul Sartre's Philosophy of Freedom
PHIL 3331 Michel Foucault's Discipline and Punish: The Birth of the Prison

d. Courses in Metaphysics and Epistemology
PHIL 1401 God, Mind and Freedom
PHIL 3404 Aquinas and Dante
PHIL 3411-19 Selected Topics in Epistemology
PHIL 3421 Philosophy of Mind
PHIL 3422 Philosophy of Science
PHIL 3431 Philosophy of Religion
PHIL 3433 Models of Divine Agency
PHIL 3432 Evil: From Job to Leonard Cohen
PHIL 3501 Contemporary Metaphysics
PHIL 3401 Introduction to the Philosophy of Kant
PHIL 3402 Introduction to the Philosophy of Hegel
PHIL 3431 Direct Divine Agency and the World
PHIL 3435 Science vs God?
PHIL 3434 The Concept of Miracle
PHIL 3307 Edmund Husserl's Pure Phenomenology

e. Courses in Aesthetics

PHIL 1501 Monsters and Philosophy
PHIL 2501 Philosophy and Film
f. Courses in Political Philosophy
PHIL 1202 Tyranny, Violence and Liberty
PHIL 3332 Philosophers and the Nazis
PHIL 3601 Liberalism and its Critics
Honours students should also note the standards required for ranking Honours degrees. These are stated in the regulations for the Bachelor of Arts degree.
Credit Courses from Cognate Disciplines
The Department of Philosophy will accept as credit courses in ancient philosophy, CLAS 3703, CLAS 3723, CLAS 3733. It will also accept for philosophy credit courses, KIN 3093, KIN 4093, POLS 3410, POLS 4483.
Certificate in Ethics
The Certificate in Ethics will provide students with the opportunity to gain a university-level credential in theoretical and applied ethics. The Certificate is comprised of eighteen (18) credit hours and offered in the following five areas of concentration: Ethical Theory, Health Ethics, Business Ethics, Miltiary Ethics, and Environmental Ethics.
1. Required Courses
The Certificate will require the successful completion (with a grade of B-or higher) of six (6) courses, totalling eighteen credit hours, which shall include the following:

a.   three (3) core courses, including PHIL 1101 Critical Thinking, a 2000-level or 3000-level course in Ethical Theory, and a breadth of requirements drawn from a Certificate area of concentration in applied ethics that is NOT being pursued by the student.
b.   three (3) elective courses in the student's area of concentration, including one (1) 3000-level course.

(For a list of possible courses see below).
Students cannot take more than two (2) elective courses from the student's own home department.
The course work will be approved by the Department of Philosophy.
To be awarded the Certificate, a minimum of nine (9) credit hours must be completed at UNB. Subject to approval by the Dean of Arts, a maximum of nine (9) credit hours (or the equivalent) of comparable coursework may be transferred from other recognized post-secondary institutions. Credit will not normally be awarded for those courses completed more than five years prior to the student's return to university study, in accordance with the norms already in place by the Registrar's Office.
2. Electives
ADM 3875 Labour Relations
ANTH 4024 Anthropology and Ethics
CCS 3063 Literature of the Holocaust
CCS 3064 The Holocaust: East European Representations and Responses
CLAS 3063 Ancient Greek Warfare
CLAS 3513 The Trojan War: Myth and History
ECON 3203 Public Finance Analysis
ENGG 4013 Law and Ethics for Engineers
ENR 1002 Resource Management Issues, Ethics and Communications II
ENR 2021 Natural Resource Management, Institutions, Policy and Governance
ENVS 2023 Climate Change
FOR 2946 Bioethics, Emotional Intelligence and the Nature Spirituality
HIST 1009 Epidemic Disease from the Middle Ages to the Present
HIST 1625 The Spy in History
HIST 3825 That Nature and Limits of Military Power, 1500-2000
HIST 4851 Law and War
HIST 5275 Health and Medicine in Early Modern England
KIN 3093 Ethics and Kinesiology
KIN 4093 Seminar on Health Care Ethics
PHIL 1201 Ethics of Life and Death
PHIL 2201 Introduction to Ethics
PHIL 3206 Environmental Ethics (Students can receive credit for only one of PHIL 2206, PHIL 3206, and PHIL 3208).
PHIL 3204* Business Ethics
PHIL 3205 Contemporary Ethical Theory
PHIL 3208 Ecological Ethics (Students cannot take both PHIL 2206 and PHIL 3208 for credit)
PHIL 3209 Health Care Ethics in Canada (students cannot take both PHIL 2009 and PHIL 3209 for credit)
PHIL 3211 Cyber Ethics
PHIL 3261 Military Ethics
PHIL 3262 Applied Professional Ethics*
PHIL 3302 Later Greek Philosophy
PHIL 3306 Kierkegaard, Nietzsche, and the Root of Postmodernism
PHIL 3308 Plato's *Republic*
PHIL 3312 Infinity: Emmanuel Levinas' Encounter with the Other
PHIL 3315 Hannah Arendt and Simone de Beauvoir
PHIL 3264 Ethics*
POLS 1503 Law, Power and Politics
POLS 1603 Politics of Globalization

POLS 2503 Women & Politics
POLS 3103 Right in Conflict in North America
POLS 3415 Liberalism
POLS 3433 Late Modern Political Thought
POLS 3715 Work in the World Economy
POLS 3718 International Security in Theory and Practice
POLS 4463 Eros & Leadership
POLS 4495 Gender and War: History and Contemporary Perspectives
POLS 4496 Thucydides: War and Empire
SOCI 2365 Sociology of Death and Dying
SOCI 3004 Theoretical Foundations of Sociology
SOCI 3371 The Institution of Health Care
SOCI 3533 Social Inequality
SOCI 3623 White Collar Crime
SOCI 3635 Conflict Resolution
SOCI 3636 Restorative Justice
SOCI 4264 Health Care in International Context
SOCI 4513 Inequality and Social Justice
Graduate Study in Philosophy at UNB
To be accepted as a candidate for the degree of MA in Philosophy, applicants will normally be expected to have a letter grade average of at least B in a minimum of 42 credit hours in Philosophy (or equivalent, e.g. a 70% average in seven full courses in Philosophy). Applicants with an average of less than B or fewer than 42 credit hours in Philosophy may be admitted conditionally as graduate students for a qualifying year. Further details may be found in the Calendar of the School of Graduate Studies.

POLITICAL SCIENCE
DEPARTMENT OF POLITICAL SCIENCE

General Information:	Tilley Hall, Room 219
Mailing Address:	Department of Political Science University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4826
Email:	polisci@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ politicalscience/index.html
Chair:	Dr. Donald Wright

FACULTY

- Hindmarch, Suzanne, BA (Alberta), MA (Dalhousie), PhD (Toronto), Assoc Prof - 2015
- Howe, Paul, BA (Tor), MSc (London School of Economics & Pol. Sc.), PhD (UBC), Prof – 2001
- MacLean, George, BA (King's College/Dalhousie), MA (McMaster), PhD (Queen's), Prof - 2014
- McDonald, Ted, BA (St. Francis Xavier), MA, PhD (Melbourne), Prof - 2001
- Millar, Heather, BA (Simon Fraser), MPP (Simon Fraser, PhD (Toronto), Asst. Prof - 2019
- Rosales, Antulio, BA (Trent), MSc (Venezuela), PhD (Waterloo), Asst. Prof - 2017
- Workman, Thom W., BA(Car), MA, PhD (York), Prof - 1994
- Wright, Donald, BA (MtA), MA (McGill), PhD (Ottawa), Prof & Chair – 2005
- Wright, Joanne, BSc (MtA), MA (UNB), PhD (York), Prof & Dean – 2005

General Information
1000-level courses introduce the discipline. Students who are thinking of pursuing a Political Science program - a Minor, Major, or Honours - should take one or two of these courses in their first year.
2000-level courses are Foundation courses, which introduce the main sub-fields.
3000-level courses are Advanced courses on specialized topics.
4000-level courses are Seminars, open to senior students.
The courses are grouped into sub-fields, which are intended to guide students in developing a coherent program of study, but students may choose according to their interests and course availability as long as they meet program requirements.
Minor, Majors and Honours
Minor
A Minor in Political Science consists of 24 ch in Political Science courses, of which at least 6 ch must be in Introductory Level courses (1000 or 2000 level) and 12 ch in Upper Level courses (3000 or 4000 level).
Minor in Public Policy
This is a joint Minor offered by the Departments of Economics and Political Science. The Minor is open to all students including those majoring in Economics and Political Science.
Students may minor in Public Policy by completing 24 ch of courses offered by the Department of Economics and the Department of Political Science.

a. 6 ch of economics (ECON) courses chosen from: ECON 1014 or ECON 1013, ECON 1024 or ECON 1023, ECON 2203, ECON 3505, ECON 3705, ECON 3905.

b. 6 ch of introductory political science (POLS) courses chosen from: POLS 1203, POLS 1603, POLS 2013, POLS 2202, POLS 2303, POLS 2403, POLS 2603, POLS 2703.

c. 6 ch of advanced economics (ECON) courses from: ECON 3055, ECON 3203, ECON 3504, ECON 3702, ECON 3755, ECON 3775, ECON 3801, ECON 3815, ECON 3845, ECON 3865.

d. 6 ch of advanced political science (POLS) courses from: POLS 3103, POLS 3213, POLS 3215, POLS 3217, POLS 3241, POLS 3251, POLS 3257, POLS 3323, POLS 3392, POLS 3461, POLS 3531, POLS 3647, POLS 3845, POLS 4724, POLS 4725, POLS 4727, POLS 4734, POLS 4735.

Majors Program

NOTE: These regulations apply to students who began their program at UNB in Fall 2022 or after. For regulations pertaining to students who entered before that date, please consult an earlier calendar or the Department.

- **Single Major:** Students studying for a single Major in Political Science shall complete a total of 42 ch in Political Science, 24 ch of which must be in upper level courses. Students must include 12 ch from the list of required courses below:
  - o 3 ch of Canadian Politcs
    - o POLS 2202 Canadian Politics (3 ch)
  - o 3 ch of International Relations or Political Economy from the courses below:
    - o POLS 2013 Introduction to Political Economy (3 ch)
    - o POLS 2703 Introduction to International Relations (3 ch)
  - o 3 ch of Comparatiive Politics from the courses below:
    - o POLS 2303 Politics of the Developing World (3 ch)
    - o POLS 2603 Comparative Politics of the Industrialized World (3 ch)
  - o 3 ch of Theory from the courses below:
    - o POLS 2403 Political Theory into the Present (3 ch)
    - o POLS 3403 The Tradition of Political Theory (3 ch)
- **Double Major**: Students studying for a Double Major in Political Science and another discipline shall complete a total of 30 ch in Political Science, 18 ch of which must be in upper level courses. Students must include 9 ch from the list of required courses below:
  - o 3 ch of Canadian Politcs
    - o POLS 2202 Canadian Politics (3 ch)
  - o 3 ch of International Relations or Political Economy from the courses below:
    - o POLS 2013 Introduction to Political Economy (3 ch)
    - o POLS 2303 Politics of the Developing World (3 ch)
    - o POLS 2603 Comparative Politics of the Industrialized World (3 ch)
    - o POLS 2703 Introduction to International Relations (3 ch)
  - o 3 ch of Theory from the courses below:
    - o POLS 2403 Political Theory into the Present (3 ch)
    - o POLS 3403 The Tradition of Political Theory (3 ch)

Honours Program

In order to be eligible for admission to the Honours program, students must have:

1. a GPA of at least 3.0 in Political Science courses
2. a cumulative GPA of 2.5 or higher
3. at least 60 ch of course work completed
4. at least 12 ch of course work in Political Science completed

Students studying for Honours in Political Science should contact the Departmental Undergraduate Advisor. Approval by the Undergraduate Advisor, in consultation with the Department, is required.

Students wishing to apply for admission to the program are encouraged to contact the Undergraduate Advisor in the term prior to entry.

Single Honours

Students studying for Honours in Political Science must complete at least 48 ch in Political Science, 30 ch of which must be in upper level courses. Honours students must include the following in their program:

- o 3 ch of Canadian Politcs
  - o POLS 2202 Canadian Politics (3 ch)
- o 3 ch of International Relations or Political Economy from the courses below:
  - o POLS 2013 Introduction to Political Economy (3 ch)
  - o POLS 2703 Introduction to International Relations (3 ch)
- o 3 ch of Comparatiive Politics from the courses below:
  - o POLS 2303 Politics of the Developing World (3 ch)
  - o POLS 2603 Comparative Politics of the Industrialized World (3 ch)
- o 3 ch of Theory from the courses below:
  - o POLS 2403 Political Theory into the Present (3 ch)
  - o POLS 3403 The Tradition of Political Theory (3 ch)
- o 3 ch of Methods from the courses below:

- o POLS 3534 Quantitative Approaches in Political Science (3 ch)
- o POLS 3535 Qualitative Methods in Political Science (3 ch)
- o POLS 4900 Honours Thesis
- o 6 ch of Political Science courses at the 4000-level (in addition to POLS 4900)

Joint Honours

Students studying for Joint Honours in Political Science and another discipline must complete at least 30 ch in Political Science, 18 ch of which must be in upper level courses. Honours students must include the following in their program:

- o 3 ch of Canadian Politcs
  - o POLS 2202 Canadian Politics (3 ch)
- o 3 ch of International Relations or Political Economy from the courses below:
  - o POLS 2013 Introduction to Political Economy (3 ch)
  - o POLS 2303 Politics of the Developing World (3 ch)
  - o POLS 2603 Comparative Politics of the Industrialized World (3 ch)
  - o POLS 2703 Introduction to International Relations (3 ch)
- o 3 ch of Theory from the courses below:
  - o POLS 2403 Political Theory into the Present (3 ch)
  - o POLS 3403 The Tradition of Political Theory (3 ch)
- o 3 ch of Methods from the courses below:
  - o POLS 3534 Quantitative Approaches in Political Science (3 ch)
  - o POLS 3535 Qualitative Methods in Political Science (3 ch)
- o 6 ch of Thesis from the courses below:
  - o POLS 4900 Honours Thesis (6 ch)
  - o 6 ch Honours Thesis from another department.
    - ▪ If a student is completing a Joint Honours in Political Science and any other Arts program requiring a 6 ch Honours thesis, that 6 ch course may replace POLS 4900. Prior approval from the Undergraduate Honours Advisor must be obtained.
- o 3 ch of Political Science courses at the 4000 level (in addition to POLS 4900)

Course Credit:

Students may count courses towards the fulfilment of their program requirements in a Single Major, Double Major or Honours in Political Science only if they receive a grade of C or better. Students must achieve a grade of B- or better in POLS 4900 to receive an Honours degree.

SUB-FIELDS IN POLITICAL SCIENCE

CANADIAN POLITICS	
POLS 1203	Political Issues in Canada and Beyond
POLS 2202*	Canadian Politics
POLS 3103	Rights in Conflict in North America
POLS 3213	Capitalism, Canada and Class
POLS 3215	Issues in Canadian Public Policy
POLS 3217	Canadian Environmental Policy
POLS 3237	The Politics of Memory in Canada and the United States (O)
POLS 3241	Canadian Foreign Policy
POLS 3247	Trudeau's Canada
POLS 3251	Canadian Federalism
POLS 3257	Law and Politics in Canada
POLS 3647	Democratic Disengagement
POLS 4416	Canadian Political Thought
POLS 4724	Topics in Environmental History and Politics
COMPARATIVE POLITICS	
POLS 1303	Pivotal Poltical Events
POLS 1451	The American Presidential Election in Historical Context (O)
POLS 1803	Politics of Cimate Change
POLS 2013	Introduction to Political Economy
POLS 2303	Politics of the Developing World
POLS 2503	Women and Politics
POLS 2603	Comparative Poltics of the Industrialized World
POLS 3103	Rights in Conflict in North America
POLS 3104	African American Politics (O)
POLS 3105	American Politics
POLS 3312	Political Sociology (Cross-Listed: SOCI 3312)
POLS 3323	Urban Politics and Policy (O)
POLS 3387	Theories of Comparative Politics
POLS 3392	Comparative Public Policy
POLS 3418	Politics and Protest Music
POLS 3461	Politics and Policy Analysis
POLS 3647	Democratic Disengagement

POLS 3717	The Politics of Nationalism
POLS 4721	Politics and the Human Condition
POLS 4723	The Rise of the Far Right
POLS 4724	Topics in Environmental History and Politics
POLS 4725	Climate and Energy Policy
INTERNATIONAL RELATIONS	
POLS 1603	Politics of Globalization
POLS 1703	Issues in World Politics
POLS 1803	Politics of Climate Change
POLS 2013	Introduction to Political Economy
POLS 2303	Politics of the Developing World
POLS 2703	Introduction to International Relations
POLS 3213	Capitalism, Canada and Class
POLS 3241	Canadian Foreign Policy
POLS 3447	Gender, Race and Global Politics
POLS 3614	Ethics and International Politics
POLS 3615	International Relations Theory
POLS 3635	The Critical Study of War
POLS 3637	Capitalism and War
POLS 3643	United Nations
POLS 3716	Governance of the Global Economy
POLS 3718	International Security in Theory and Practice
POLS 4495	Gender and War: Historical and Contemporary Perspectives (O)
POLS 4496	Thucydides: War and Empire
POLS 4727	The Politics of Global Health
POLITICAL ECONOMY	
POLS 1303	Pivotal Political Events
POLS 1703	Issues in World Politics
POLS 1803	Politics of Climate Change
POLS 2013	Introduction to Political Economy
POLS 2303	Politics of the Developing World
POLS 3011	European Imperialism, 1815-1914 (Cross-Listed: HIST 3011)
POLS 3012	European Imperialism, 1914-1975 (Cross-Listed: HIST 3012)
POLS 3213	Capitalism, Canada and Class
POLS 3447	Gender, Race and Global Politics
POLS 3637	Capitalism and War
POLS 3716	Governance of the Global Economy
POLS 3724	Latin American Politics and Development
POLS 4724	Topics in Environmental History and Politics
POLS 4734	Political Economy of Energy and the Environment
PUBLIC POLICY	
POLS 1803	Politics of Climate Change
POLS 3103	Rights and Conflict in North America
POLS 3213	Capitalism, Canada, and Class
POLS 3215	Issues in Canadian Public Policy
POLS 3217	Canadian Environmental Policy
POLS 3241	Canadian Foreign Policy
POLS 3251	Canadian Federalism
POLS 3257	Law and Politics in Canada
POLS 3323	Urban Politics and Policy (O)
POLS 3392	Comparative Public Policy
POLS 3461	Politics and Policy Analysis
POLS 3531	Political and Policy Writing
POLS 3647	Democratic Disengagement
POLS 3845	Law and Public Policy
POLS 4724	Topics in Environmental History and Politics
POLS 4725	Climate and Energy Policy
POLS 4727	The Politics of Global Health
POLS 4734	The Political Economy of Energy and the Environment
POLS 4735	Theories of the Policy Process
THEORY	
POLS 1403	Contemporary Political Ideas and Ideologies
POLS 2503	Women and Politics
POLS 3313	Political Psychology
POLS 3387	Theories of Comparative Politics
POLS 3415	Liberalism
POLS 3418	Politics and Protest Music
POLS 3433	Late Modern Political Thought
POLS 3441	Women Political Thinkers
POLS 3443	Feminist Issues in Political Thought
POLS 3446	Subjects, Citizens, Individuals: Politics of the Early Modern World (O)
POLS 3471	When the Bards of Bothered: Political Critique in Literature (O)
POLS 3475	Marx and Marxism (O)
POLS 3615	International Relations Theory
POLS 3645	Society, Politics, and War in 5th Century Greece

POLS 4416	Canadian Political Thought (O)
POLS 4495	Gender and War: Historical and Contemporary Perspectives (O)
POLS 4496	Thucydides: War and Empire
POLS 4721	Politics and the Human Condition
METHODS, SKILLS & INDEPENDENT STUDY	
POLS 3531	Political and Policy Writing
POLS 3533	Research Methods in Political Science
POLS 3534	Quantitative Approaches in Political Science
POLS 3900	Independent Study in Political Science
POLS 3903	Independent Study in Political Science
POLS 3905	Independent Study in Political Science
POLS 4900	Honours Thesis

PSYCHOLOGY

DEPARTMENT OF PSYCHOLOGY

General Information:	Keirstead Hall, Room 119
Mailing Address:	Department of Psychology, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4707
Email:	psyc@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ psychology/index.html
Chair:	Dr. E. Sandra Byers

FACULTY

- Byers, E. Sandra, BA (Roch), MA, PhD (W Virginia), Prof & Chair – 1978
- D'Entremont, Barbara, BSc, MSc (Dal), PhD (Qu), Prof – 2000
- Deibel, Scott, BSc,. MSc (MUN), PhD (Lethbridge), Asst Prof - 2021
- Hamilton, Ryan, BA, MSES, PhD (UNB), Assoc Prof - 2013
- LaChapelle, Diane, BSc (McM), MA, PhD (Regina), Assoc Prof – 2002
- Lacroix, Emilie, BA (McG), MSc (Cal), Lecturer - 2021
- Olthuis, Janine, BA (Smith), PhD (Dalhousie), Asst Prof - 2016
- O'Sullivan, Lucia, BA, MA (UNB), PhD (Bowl), Prof – 2006
- Palmer, Michael, BS, MS, PhD (Central Michigan), Asst Teaching Prof - 2017
- Perunovic, W. Q. Elaine, BA, PhD (Wat.), Assoc Prof - 2007
- Poulin, Carmen, BA (UNB), MA, PhD (Qu), Prof - 1991
- Richards, Meghan, BA/BSc, MA, PhD (Lakehead), Senr Inst - 2017
- Ronis, Scott, BA (Brandeis), MA, PhD (Missouri), Prof - 2009
- Sears, Heather, BSc (Acad.), MA, PhD (Victoria), Prof - 1995
- Stevanovski, Biljana, BA (McM), MA, PhD (Wat), Assoc Prof - 2007
- Voyer, Daniel, BSc, MSc (Montr.), PhD (Wat.), Prof – 2000
- Whitford, Veronica, BA, PhD (McGill), Asst Prof - 2019

General Information
The Department of Psychology offers several undergraduate programs through the Faculty of Arts and the Faculty of Science. Arts students may complete Minors, Majors, Double Majors, Honours, Joint Honours and Specialization in Neuroscience programs. Science students may complete Minors, Majors or Honours in Psychology. Some students may complete degrees in a combined (BASc) program or earn both Arts (BA) and Science (BSc) degrees in a concurrent program. Students in the concurrent program may declare the Major or apply for admission to Honours in Psychology in either Faculty but not both. Students in the combined program may declare the Major (following the Double Major regulations) in Psychology in either Faculty but not both.

Psychology courses generally follow the course numbering system described on page H.1 of the UNB Undergraduate Calendar. The second digit in each course number indicates Teaching Areas within the discipline of psychology. The Areas and the specific course numbers of the courses belonging to each Area are as follows:

0. General 1013, 1023, 3033, 3043, 3053, 3063,3073, 4003, 4053;
1. Research 2103, 2113, 3113, 3123, 3151, 3152, 4103, 4110, 4123;
2. Developmental 2203, 3213, 3215, 3233, 3243, 3253, 3263, 3273, 4203, 4223;
3. Clinical 2313, 3313, 3315, 3323, 3343, 3353, 3373, 3383, 4303;
4. Personality and Social 2403, 3403, 3413, 3415, 3423, 3433, 3443, 3453, 4403;
5. Learning 2515, 3515, 3525, 3535, 3545, 3555, 3565, 4515, 4525, 4535, PSYC 4565;[1]
6. Memory and Cognition 2603, 3613, 3623, 3633, 3643, 4603;
7. Biological 2703, 3713, 3723, 3733, 3743, 3745, 3753, 3773, 3783, 4713, 4743, 4773.

The third digit in each course number designates the course within the Teaching Area. Terminal digits of 3 or 5 indicate the course could be offered in any term. Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063 and PSYC 3073 may be counted toward a Major or Honours in Psychology.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

1. Only the following Area 5 courses may be counted toward the Honours, Major, or Minor in Psychology: 2515, 3515, 3565, and 4515. All other Area 5 courses are specific to the ABA Certificate Program but may be taken as electives toward the BA or the BSc.

Statement on Web Courses

The Department of Psychology offers some online Web Courses to students through the College of Extended Learning. The Department of Psychology has approved these courses as equivalent to regular courses. In the Undergraduate Timetable, the section number for all Web Courses is listed as Open Access Learning.

In exceptional cases Full-time students may be given permission to enrol in Web Courses as part of their regular course load. Current regulations require Web courses taken by Full-time students during the Winter and Fall terms to be approved by the Dean of the faculty offering the course. Web Courses must be on the list of courses approved by the Department as equivalent to existing courses and must include a proctored final exam. The following Web Courses have been approved by the Department of Psychology as equivalent to regular courses:

PSYC 1013 Introductory Psychology on the WEB- I 3 ch (online)
PSYC 1023 Introductory Psychology on the WEB- II 3 ch (online)
PSYC 2203 Foundations of Developmental Psychology 3 ch (online)
PSYC 2313 Foundations of Clinical Psychology 3 ch (online)
PSYC 2403 Foundations in Social Psychology 3 ch (online)
PSYC 2603 Foundations of Memory and Cognition 3 ch (online)
PSYC 2613/PSYC 2515 Foundations of Learning (online)
PSYC 2703 Foundations of Biological Psychology 3 ch (online)
PSYC 3213 Language Development 3 ch (online)
PSYC 3663/PSYC 3515 Applied Behaviour Analysis 3 ch (online)
PSYC 3673/PSYC 4515 Advanced ABA 3 ch (online)

Minor, Majors and Honours

Minimum Academic Standards

A grade of C or better must be attained in each of the courses taken to meet the minimum requirements of any of the programs listed below. Students are advised to carefully plan their selection and sequencing of Foundation courses as each course is a prerequisite for higher level courses within the same Teaching Area.

Minor

A Minor will consist of 24 ch in Psychology courses and will include the following:

- PSYC 1013, PSYC 1023, PSYC 2103/PSYC 2123,
- two Foundation courses (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703), and
- three advanced level (3xxx or 4xxx) Psychology courses.

Majors

Students wishing to Major in Psychology will normally declare their major during their second year after they have seen their Department advisor.

Single Major:

A Single Major will consist of 48 ch in Psychology courses and will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12 ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)
- seven advanced level Psychology courses 21 ch (3xxx or 4xxx level) and
- History of Psychology 3 ch (PSYC 4053)

Double Major:

A Double Major will consist of 42 ch in Psychology courses and will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12 ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)
- five advanced level Psychology courses 15 ch (3xxx or 4xxx level)
- History of Psychology 3 ch (PSYC 4053)

Honours

Students wishing to Honour in Psychology will normally apply to the Department in their third year. The Honours Program is designed to provide broad exposure to the discipline and develop research skills appropriate for students wishing to pursue graduate studies in Psychology.

Honours (Single):

A Single Honours will consist of 57 ch in Psychology courses and will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)

- four Foundation courses 12 ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)
- seven advanced level Psychology courses 21 ch (3xxx or 4xxx level)
  - Students must take one or both Basic Research Seminars (PSYC 3151, 3152) in their third year. Students must also take at least one Topical Seminar (PSYC 4003, PSYC 4103, PSYC 4203, PSYC 4223, PSYC 4303, PSYC 4403, PSYC 4603, PSYC 4713, PSYC 4743, or PSYC 4773).
- Advanced Statistics 3 ch (PSYC 3113)
- full year Honours Thesis 6 ch (PSYC 4110), and
- History of Psychology 3 ch (PSYC 4053)

The Honours Thesis: The Honours Thesis will consist of an independent research project, completed in the fourth year, supervised by a Psychology faculty member and discussed in the Honours Thesis Research Seminar. Students must take one or both Basic Research Seminars (PSYC 3151, PSYC 3152) in their third year. Applicants to the Honours Program should apply by submitting the Honours Program Application Form, normally in the third year of their program, to the Honours Research Coordinator, who will facilitate the process of matching students and supervisors. Only students with a cumulative grade point average of at least 3.6 in Psychology courses will be considered for the Honours Program.

Joint Honours:

A Joint Honours will consist of 48 ch in Psychology courses and will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12 ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603, PSYC 2613, and PSYC 2703)
- four advanced level Psychology courses 12 ch (3xxx or 4xxx level). Students must take one or both Basic Research Seminars (PSYC 3151, 3152) in their third year.
  - Students must also take at least one Topical Seminar (PSYC 4003, PSYC 4103, PSYC 4203, PSYC 4223, PSYC 4303, PSYC 4313, PSYC 4403, PSYC 4603, PSYC 4713, PSYC 4743, or PSYC 4773).
- Advanced Statistics 3 ch (PSYC 3113)
- full year Honours Thesis 6 ch (PSYC 4110), and
- History of Psychology 3 ch (PSYC 4053)

The Joint Honours Thesis: The Joint Honours Thesis is the same as the Honours Thesis described in the preceding section (The Honours Thesis).

Specialization in Neuroscience

Major

A Major in Psychology with Specialization in Neuroscience will consist of 48 ch in Psychology and 24 ch in Biology. The Psychology courses will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- Foundations of Biological Psychology 3 ch (PSYC 2703)
- three Foundation courses 9 ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603, and PSYC 2613)
- three advanced level Area 7 courses 9 ch (selected from PSYC 3713, PSYC 3723, PSYC 3733, PSYC 3743, PSYC 3745, PSYC 3753, PSYC 3773, PSYC 3783, PSYC 4713, PSYC 4743 and PSYC 4773)
- four advanced level Psychology courses 12 ch (3xxx or 4xxx level), and
- History of Psychology 3 ch (PSYC 4053)

The Biology courses will consist of the following: Introductory Biology 6 ch (BIOL 1001 or BIOL 1551 and BIOL 1012 or BIOL 1552) and a minimum of any six additional courses in Biology 18 ch.

Honours

The Honours in Psychology with Specialization in Neuroscience will consist of 57 ch in Psychology and 24 ch in Biology. The Psychology courses will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- Foundations of Biological Psychology 3 ch (PSYC 2703)
- three Foundation courses 9 ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603 and PSYC 2613)
- three advanced level Area 7 courses 9 ch (selected from PSYC 3713, PSYC 3723, PSYC 3745, PSYC 3753, PSYC 3773, PSYC 3783, PSYC 4713, PSYC 4743 and PSYC 4773)
- four advanced level Psychology courses 12 ch (3xxx or 4xxx level)
  - Students must take one or both Basic Research Seminars (PSYC 3151, PSYC 3152) in their third year. Students must also take at least one Topical Seminar (PSYC 4003, PSYC 4103, PSYC 4203, PSYC 4303, PSYC 4403, PSYC 4603, PSYC 4713, PSYC 4743, or PSYC 4773).

- Advanced Statistics 3 ch (PSYC 3113)
- full year Honours Thesis 6 ch (PSYC 4110), and
- History of Psychology 3 ch (PSYC 4053)

The Biology courses will consist of the following: Introductory Biology 6 ch (BIOL 1001 or BIOL 1551 and BIOL 1012 or BIOL 1552) and a minimum of any six additional courses in Biology 18 ch. The Honours Thesis is the same as the Honours Thesis described in the above section (The Honours Thesis) except that normally the research topic will be on a topic represented by Teaching Areas 6 or 7.

Majors and Honours in Psychology (Science)
Science students choosing the Psychology Option must follow the regulations provided under the Bachelor of Science in Section G of this Calendar.

Certificate in Appled Behaviour Analysis
The Certificate in Applied Behaviour Analysis (ABA) Program, offered through the Department of Psychology, is the first and only program of its kind in Atlantic Canada and prepares individuals for careers as competent assistant behaviour analysts. ABA is an evidence-based practice and science commonly associated with the treatment of autism spectrum disorder, which also has applications in business settings, behavioural health, and education, among other areas. The overall goal of ABA is to teach skills to individuals which allow them to be successful in their context.

Throughout the program, students learn the foundations of behaviour analysis, such as how people learn and unlearn behaviours and skills. Students gain skills in the applications of behaviour analysis, such as why someone engages in inappropriate behaviour, how to set up a behaviour intervention plan, and how to manage behaviour change programs in ethical ways.

Upon completion of the certificate programs, students with a bachelor's degree may be eligible to apply to write the exam to become certified as a Board Certified Assistant Behaviour Analyst (BCaBA).

Admission Requirements
To apply for admission into the Certificate in ABA Program, students must have completed, or be in the process of completing a Bachelor's degree in Psychology or a related field. Applicants must have completed 6 ch of Introductory Psychology with a grade of at least a B within the previous 7 years and must have maintained a minimum of B average in all coursework.

To apply for the ABA program, applicants must submit:

(a) a resume that outline their academic experience and any relevant work / volunteer experience.
(b) a statement of interest outlining experiences and interest related to the Certificate in ABA Program.
(c) official transcripts of all previous coursework.
(d) a letter of recommendation from an academic referee (i.e. a professional individual who is aware of the applicant's scholastic ability within a post-secondary setting), and
(e) a letter of recommendation from a supervisor referee (i.e. an individual who has supervised the applicant in a clinical or applied setting).

To apply, current UNB students must complete the Undergraduate Transfer Request Form, declare interest in completing the Certificate in ABA Program concurrently with their current degree program, and submit the form, along with the supplementary documents listed above, to the Registrar's Office (Admissions).

Program of Study
The Certificate in ABA Program requires successful completion, with a grade of B or higher, of all of the courses and practical experience outlined below, amounting to 39 ch.

Required Courses:
PSYC 2203 Foundations of Developmental Psychology (3 ch)
PSYC 2515 Foundations of Learning (3 ch)
PSYC 3515 Introduction to Applied Behaviour Analysis (3 ch)
PSYC 3525 Topics in Behaviour Analysis: Ethical Considerations (3 ch)
PSYC 3535 Topics in Behaviour Assessment (1 ch)
PSYC 3545 Topics in Behaviour Intervention (1 ch)
PSYC 3555 Skills in Applied Behaviour Analysis (1 ch)
PSYC 3565 Clinical and Organizational Applications of Behaviour Science (3 ch)
PSYC 4515 Advanced Applied Behaviour Analysis (3 ch)

All above courses are offered are online as Web Courses to students through the College of Extended Learning. The Department of Psychology has approved these courses as equivalent to regular courses. The Undergraduate Timetable lists the section number for all Web Courses as Open Access Learning. PSYC 2203, 2515, 3515, 3565, and 4515 are also offered as regular, in-class courses and can also be used to fulfill requirements of the Major in Psychology. All other courses, including the practicum courses, cannot be used to fulfill requirements of the Major in Psychology.

Required Practical Experience:
Normally, on-campus students are required to accrue 1000 hours of intensive practicum experience across three separate practicum courses. The practicum courses consist of 10-20 hours of practical experience per week (40-80 hours per month). Practicum experiences are supervised by a Board Certified Behaviour Analyst.
PSYC 4525 Applied Behaviour Analysis Practicum I/Independent Study I (6 ch)
PSYC 4535 Applied Behaviour Analysis Practicum II/Independent Study II (6 ch)
PSYC 4565 Applied Behaviour Analysis Practicum III/Independent Study III (6 ch)
The Certificate in ABA Program is also available to online students through the College of Extended Learning.
For more information, please visit:
https://www.unb.ca/cel/career/behavioural-intervention/aba-certificate.html

SOCIOLOGY

DEPARTMENT OF SOCIOLOGY

General Information:	Tilley Hall, Room 20
Mailing Address:	Department of Sociology, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4849
Email:	socio@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ sociology/index.html
Chair:	Dr. Lucia Tramonte

FACULTY

- Bombak, Andrea, BSc (Calg)., MA, PhD (Manitoba), Asst Prof - 2017
- Bowden, Gary, BA (W. Wash), MA, PhD (Calg), Assoc Prof - 1990
- Dafnos, Tia, BA (U of T), MA, PhD (York), Assoc Prof - 2015
- Gill, Carmen, BA, MA, PhD (Qc), Prof - 2004
- Gupta, Neeru, BSc, PhD (Montr), Assoc Prof - 2016
- Hardy, Nick, BA, MA (Essex), PhD (Qu), Assoc Prof - 2013
- Hofmann, David, BA (Western), MSc (U de Montreal), PhD (Waterloo), Assoc Prof - 2016
- Holtmann, Cathy, BA (Winnipeg), MDiv (St Michael's), MA (UNB), PhD (UNB), Assoc Prof & Dir MMF Ctr for Family Violence Research - 2015
- Low, Jacqueline, BA, MA (Conc.), PhD (McM), Prof - 2001
- Miedema, Baukje, BA, MA, PhD (UNB), Adjunct - 2011
- Nason-Clark, Nancy, BSc (Houghton Col. NY), MA (Wat), PhD (Lond), Prof Emerita - 1984
- Neilson, Linda, BA, LL.B (UNB), PhD (Lond), Prof Emerita - 1993
- O'Donnell, Susan, BA (Ott), MA (Cardiff), Adjunct - 2004
- Reddick, Andy, BA (Qu, Car), MA, PhD (Carl), Adjunct - 2012
- Rehorick, David A., BA, MA, PhD (Alta), Prof Emeritus - 1974
- Thériault, Luc, BA (Qc), MSc (Montr), PhD (Tor), Prof - 2005
- Tramonte, Lucia, BA, MA, PhD(UNIMI), Prof - 2009
- van den Hoonaard, Will C., BA (UNB), MA (Mem), PhD (Manc), Prof Emeritus - 1979

General Information
The Sociology Department curriculum is divided into different levels that students should be aware of when choosing courses in which to enrol. By selecting the courses most appropriate to a student's level of existing sociological knowledge and current level of undergraduate study, students will have a much more rewarding learning experience. If in any doubt, contact the Sociology Undergraduate Director or a particular course Instructor for enrolment guidance.

Lower Level Courses
Lower Level courses numbered in the 1000s - e.g., SOCI 1503 'Sociological Perspectives' - are considered introductory courses. A course at this level is designed with the assumption that students have no or very little background in sociology and is taught in a way that builds up knowledge of sociology. Courses may cover a variety of topics year by year, but all will help develop sociological thinking and reasoning. 1000-level courses are excellent for First-Year Arts Faculty students as well as First-, Second-, or even Third-Year students from other Faculties.
Lower Level courses numbered in the 2000s - e.g., SOCI 2603 'Sociology of Deviance' - are considered to be foundational sociology courses covering subjects and topics that are designed to give students a firm basis on which to continue studies in sociology as well as, potentially, other Arts Faculty subjects. Foundational courses focus more heavily upon a single topic (in contrast to the more general 1000-level courses), enabling students to get a firm grasp of key issues in a particular subject or topic area.

Upper Level Courses
Upper Level courses numbered in the 3000s and 4000s develop abilities to conduct sociological inquiry by building upon the knowledge and skills gained in previous studies. These courses go into much more depth about the topics and subjects students are examining. At the 4000 level, courses are designed to enable students to engage at the highest

undergraduate level, using clear and precise analytical and critical reasoning.

Minor, Majors, and Honours Programs

Minor

The Minor in Sociology consists of 24 ch in Sociology. Of the 24 ch required for a Minor, at least 12 ch must be Upper Level courses. Only courses completed with a grade of C or higher count towards a Minor Sociology.

Majors

Students intending to take a Single Major in Sociology or a Double Major in Sociology and another Arts discipline are usually expected to have completed at least 12 ch of Sociology courses prior to entering their Major. Students must contact the Sociology Undergraduate Director for approval and to register for a Major in Sociology.

- Single Majors must complete a minimum of 36 ch of Sociology, of which 24 ch must be Upper Level courses.
- Double Majors must complete a minimum of 30 ch of Sociology of which 18 ch must be Upper Level courses.

Permission may be granted by the Sociology Undergraduate Advisor for a student to count up to 6 ch of 3000-level or 4000-level courses in a related subject as credit towards the requirements for a Major in Sociology.
The following courses are compulsory for a student to graduate with a Single Major: SOCI 2022, SOCI 3004, SOCI 3014, and SOCI 4022.
The following courses are compulsory for a student to graduate with a Double Major: SOCI 2022, SOCI 3004, and SOCI 3014.
Students must complete the required number of credit hours with an overall GPA of 2.0 or better. Only courses completed with a grade of C or higher count towards a Single or Double Major in Sociology.

Honours

Students intending to take a Single Honours or Joint Honours in Sociology and another Arts discipliine are usually expected to have completed at least 12 ch of Sociology courses, have a 3.3 GPA or better in Sociology

CONCURRENT DEGREE PROGRAM

CONCURRENT DEGREE IN ARTS AND SCIENCE (BA/BSc)

To be admitted to the Arts and Science program, students must meet the entrance requirements of both BA and BSc degrees given in the Admission Requirements Table under Admission Regulations.
The concurrent BA/BSc program is designed as a five-year program. To receive both degrees, students need a Major (or Honours) in an Arts discipline and a Major (or Honours) in a Science discipline - for example, BA (History) and BSc (Physics).
Within Science, students can major or honour in one of Biology, Chemistry, Earth Sciences, Mathematics and Statistics, Physics, or one of the Interdepartmental programs such as Biology-Chemistry. Students may also choose as their Science subject either Economics (unless already selected as an Arts program) or Psychology (unless already selected as an Arts program). Within Arts, students can major or honour in one of the following areas: Anthropology, Archaeology, Classical Studies, Classics, Comparative Cultural Studies, Economics, Economics Studies, English, French, German, German Studies, History, Media Arts & Cultures, Philosophy, Political Science, Psychology, Sociology, Spanish. In addition, interdisciplinary programs in International Development Studies, Law in Society, and Gender and Women's Studies are available as part of an Arts Double Major or Joint Honours; however, students are advised that completing a Double Major or Joint Honours in Arts will require more credit hours than a Single Major or Honours.
This program is ideal for students with a strong interest in one of the Sciences and one of the Arts disciplines. It is also demanding and requires a serious commitment from the student from the outset and throughout the degree. Its breadth makes it an excellent pre-professional program to prepare for studies in dentistry, medicine, veterinary medicine, optometry, and physiotherapy.
Students who enter the concurrent BA/BSc program may opt to move into either the BA or the BSc program at any stage. With the exception of labs, and SCI 1001 and SCI 1002, all courses taken during the first two years can be counted towards either a BA or a BSc (or both). Approved specialized Science labs count towards the BSc degree.
Students in the concurrent program can count many of their courses toward the requirements of both degrees, so it is important to select courses carefully from the outset. Students must seek advice and pre-approval from departmental/Faculty advisors of both Faculties at every level from pre-entry enquiries through to graduation.

Program of Study (5 Years)

First Year

1. ARTS 1001 and ARTS 1002 Development of "Western" Thought: Parts 1 and 2. Note that students who have successfully completed either ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 and ARTS 1002 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or 1053 included), 4 accompanied by labs. The choice of lecture courses and lab courses is dictated by the particular area of Science in

courses (not including 1000-level courses), and to have a 2.7 GPA or better across their other undergraduate courses. Entry for non-Arts Faculty students or for students having taken a large number of non-Arts Faculty courses might still be approved by the Sociology Undergraduate Students must contact the Sociology Undergraduate Director for approval and to register for the Honours program.

- Single Honours students must complete a minimum of 42 ch in Sociology, of which a minimum of 30 ch must be at the Upper Level.
- Joint Honours students must complete 30 ch of Sociology courses, of which a minimum of 18 ch must be at the Upper Level.

The following courses are compulsory for a student to graduate with Single Honours in Sociology: SOCI 2022, SOCI 3004, SOCI 3014, SOCI 4004, SOCI 4011, and SOCI 4022.
The following courses are compulsory for a student to graduate with a Joint Honours in Sociology: SOCI 2022, SOCI 3004, SOCI 3014, SOCI 4004, in addition to either SOCI 4011 or SOCI 4022.
There is an option in both the Single Honours programs that a student may research and write an Honours Thesis (SOCI 5000). The project should produce a 40-60 pp manuscript and must be approved by the Sociology Department. This option is only available to students with a 3.4 CGPA.
Students must complete the required number of Sociology courses with a GPA of 3.3 or better and must have an overall GPA of 2.7 or better on their general transcript. For a First Class Honours standing, students must maintain a GPA of 3.6 or above in their required Sociology courses and a GPA of 2.7 or above in their remaining courses. Only courses completed with a grade of C or higher count towards a Single Honours in Sociology or Joint Honours in Sociology and another Arts discipline.
(For further Arts Faculty regulations, please see the following link: http://www.unb.ca/academics/calendar/undergraduate/current/fredericton programs/bachelorofarts/index.html

which the student intends to major or honour, and thus decisions about which lecture and lab courses a student takes should be made in consultation with a Science Faculty advisor.
3. 6 ch (in any one discipline) chosen from either Humanities (Classics, English, History, Media Arts & Cultures, Philosophy, Comparative Cultural Studies), Languages (Ancient Greek, Chinese, French, German, Japanese, Modern Greek, Latin, Russian, Spanish), or Social Sciences (Anthropology, Archaeology, Economics, Political Science, Psychology, Sociology).

Students will select their Science Major or Honours discipline at this point. Throughout the program, advice is available on the options and course requirements. Students should have written pre-approval from the appropriate Arts and Science advisors for all programs and course selection.

Second Year

1. Two additional term lecture courses in first-year Science. Whether these need to be accompanied by labs depends upon the area of Science the student has chosen to major or honour in, and as such, these courses should be chosen in consultation with a Science Faculty advisor.
2. 12 ch (6 ch in each of 2 disciplines) chosen from Arts, including at least one discipline from a group (Humanities, Languages, Social Sciences) not chosen in the first year.
3. At least 18 ch of Science courses (certain Science programs may require more than the minimum) chosen with pre-approval from the student's Science program advisor in the respective department.

Students will select their Arts Major(s) or Honours at this time with the help of Faculty and departmental/program advisors.

Third, Fourth and Fifth Years

The exact content of years 3, 4, and 5 will depend upon the particular Arts and Science disciplines chosen. Students take advanced courses to gain a thorough understanding of their chosen disciplines and to prepare for an immediate career or further work at graduate school. Students who elect to take Honours in Arts and/or Science may extend their program beyond the five years, depending on the subjects chosen.

1. Courses in Science will be chosen in consultation with, and pre-approved by, the student's Science advisor to meet the requirement of a Science degree.
2. A total of 54 ch of courses chosen in consultation with, and pre-approved by, the student's Arts Major advisor, 36 ch of which must be upper level courses.

Students should note that at least half the advanced level credits counted towards a Major/Honours/Minor in an Arts subject must be from courses taken at the University of New Brunswick. The same regulation also applies to Science courses. Exceptions may be considered by the Dean of Arts and the Dean of Science, respectively.

Students should note that, in any given year, their course load may not be evenly balanced between Arts and Science courses. Students should plan to meet with advisors from both Faculties on an annual basis to ensure that the selected courses satisfy *Prerequisites* for upper level courses and take account of courses offered in alternating years and other program requirements.

CONCURRENT DEGREES IN ARTS AND COMPUTER SCIENCE

Many career opportunities demand a combination of in-depth scientific training with the understanding of people and the sophisticated analytic and critical skills acquired in an Arts degree. The Faculties of Arts and Computer Science at UNB in Fredericton are cooperating to make it possible for a student to graduate with both a BA and a BCS in five years. All Arts students concentrate on a Major or Honours program in their third, fourth, and fifth years chosen from any of the following disciplines: Anthropology, Archaeology, Classical Studies, Classics, Comparative Cultural Studies, Economics, Economics Studies, English, French, History, Media Arts and Cultures, Philosophy, Political Science, Psychology, Sociology, or Spanish. In addition, interdisciplinary programs in International Development Studies, Law in Society, and Gender and Women's Studies are available as part of an Arts Double Major or Joint Honours; however, students are advised that completing a Double Major or Joint Honours in Arts will require more credit hours than a Single Major or Honours.

This program is ideal for students with an interest in Computer Science and one of the Arts disciplines. It is also a demanding program that requires a serious commitment from the student from the outset and throughout the degree.

The concurrent program is designed so that if a student decides to opt for either degree alone part-way through the program, the adjustments can be made easily.

Students in the concurrent program are able to count many of their courses toward the requirements of both degrees, so it is important to select courses carefully from the outset. Advice is available from both Faculties at every level from pre-entry enquiries through to graduation. To complete the concurrent degree, students must satisfy both the BA and BCS degree requirements. Completing these requirements will involve completing at least 151 credit hours of courses.

Application and Admission

Students wishing to pursue the concurrent program should apply for admission to the Faculty of Arts at UNB's Fredericton campus, specifying on the application form an interest in the concurrent program in Arts and Computer Science. Further information on the program is available from the offices of the Dean of Arts and the Dean of Computer Science.

Faculty Affiliation

Students in the concurrent program will be registered as BA/BCS students. They will be assigned to academic advisors in the Faculty of Computer Science and in the Faculty of Arts.

Sample Program of Study

First Year

1. ARTS 1001 and ARTS 1002: Note that students who have successfully completed ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 or ARTS 1002 for credit.
2. MATH 1003 and MATH 1013 (or enriched MATH 1053 and MATH 1063)
3. CS 1073, CS 1083, and CS 1203
4. ECON 1013 and ECON 1023 (or ECON 1014 and ECON 1024)
5. 6 ch in either one Humanities discipline or one Language

Students wishing to take an additional Social Science will select the course from the First-Year Arts listings in Social Sciences.

Second Year

1. CS 1303, CS 2043, CS 2253, CS 2263
2. CS 1103
3. MATH 2213 or MATH 1503
4. 2 term courses toward the BCS Breadth Core Requirement, selected from Arts, Business Administration, Engineering, or Science
5. 9 ch of appropriate Arts courses

Third Year

1. CS 2333, CS 2383, CS 3413, CS 3853, CS 3997
2. STAT 3083 or STAT 2593
3. 15 ch of appropriate Arts courses

Fourth Year

1. CS 3383, CS 3873
2. Two CS/SWE technical electives
3. An approved third-year Math course
4. 18 ch of appropriate Arts courses

Fifth Year

1. One CS/SWE technical electives
2. Three CS/SWE technical electives at the 3000 level or above (with at least one of these at the 4000 level or above)

3. 21 ch of appropriate Arts courses

CONCURRENT BCS/BSc DEGREE PROGRAM

Most scientific careers now require a thorough background in computing. Many careers in the computing field require primary knowledge in a scientific application area. The Faculty of Science and the Faculty of Computer Science offer students a program in which to pursue a science major and a complete computer science education. Students may enrol in a concurrent degree program in which at the end of five to five-and-a-half years of study a student will graduate with both a BSc with a major in Biology, Chemistry, Earth Sciences, Mathematics, or Physics, and a BCS. Participation in the Computer Science Co-op program will lengthen the student's program. The program is designed so that if a student decides to opt for BCS alone, the adjustments can be easily made. Students in the concurrent degree program are able to count many of their courses toward the requirements of both degrees so it is important to select courses carefully from the outset, in consultation with an advisor.

Admission requirements: Students must satisfy the admission requirements for both the Bachelor of Computer Science and the Bachelor of Science as given in Section B.

Course Selections While the first and second years given below are typical, the third, fourth and fifth year will depend on the CS and Science degree programs chosen (Major, Honours, etc.)

Year 1 CS 1073, 1083, two of (CS 1103, CS 1203, or CS 1303), MATH 1003, 1013, (or 1053, 1063) plus four first term lecture courses in first year science, all four of which are accompanied by labs, chosen from Biology, Chemistry, Physics, and Earth Sciences. The particular sciences and labs chosen will depend on the intended Science program. MATH 2203 may be substituted for CS1303. Students planning to major or honour in Mathematics are strongly recommended to choose MATH 2203 rather than CS 1303. Credit will be given for only one of CS 1303 and MATH 2203.

Year 2 One of (CS 1103, CS 1203, or CS 1303), CS 2043, CS 2263, MATH 2213, one of (CS 2333, CS 1103, or CS 2383), MATH 2003, plus 6 term courses in Science (minimum 18 ch) chosen in consultation and with the approval of the advisor in your chosen Science discipline.

Year 3, 4, 5 These must be arranged in consultation with your CS and Science advisors and will be different for each student.

CERTIFICATE PROGRAMS

Certificate in Ethics

The Certificate in Ethics will provide students with the opportunity to gain a university-level credential in theoretical and applied ethics. The Certificate is comprised of eighteen (18) credit hours and offered in the following five areas of concentration: Ethical Theory, Health Ethicism, Business Ethics, Military Ethics, and Environmental Ethics.

1. **Required Courses**
   The Certificate will require the successful completion (with a grade of B-or higher) of six (6) courses, totaling eighteen credit hours, which shall include the following:
   a. three (3) core courses, including PHIL 1101 Critical Thinking, a 2000-level course in Ethical Theory, and a breadth of requirements drawn from a Certificate area of concentration in applied ethics that is NOT being pursued by the student.
   b. three (3) elective courses in the student's area of concentration, including one (1) 3000-level course.
   (For a list of possible courses see below).
   c. with the added proviso that students cannot take more than two (2) elective courses from the student's own home department.
   The course work will be approved by the Department of Philosophy.
   To be awarded the Certificate, a minimum of nine (9) hours must be completed at UNB. Subject to approval by the Dean of Arts, a maximum of nine (9) credit hours (or the equivalent) of comparable coursework may be transferred from another recognized post-secondary institution. Credit will not normally be awarded for those courses completed more than five years prior to student's return to university study, in accordance with the norms already in place by the Registrar's office.

2. **Possible Courses**
   ADM 3875 Labour Relations
   ANTH 4024 Anthropology and Ethics
   CCS 3063 Literature of the Holocaust
   CCS 3064 The Holocaust: East European Representations and Responses
   CLAS 3063 Ancient Greek Warfare
   CLAS 3513 The Trojan War: Myth and History
   ECON 3203 Public Finance Analysis
   ENGG 4013 Law and Ethics for Engineers
   ENR 1001 Resource Management Issues, Ethics and Communications I

ENR 1002 Resource Management Issues, Ethics and Communications II
ENR 2021 Natural Resource Management, Institutions, Policy and Government
ENVS 2023 Understanding Environmental Issues
FOR 2946 Bioethics, Emotional Intelligence, and the Nature of Spirituality
HIST 1009 Epidemic Disease from the Middle Ages to the Present
HIST 5275 Health and Medicine in Early Modern England
HIST 4851 Law and War
HIST 1625 The Spy in History
HIST 3825 That Nature and Limits of Military Power
KIN 3093 Introduction to Ethics of Sport & Recreation
KIN 4093 Seminar on Health Care Ethics
PHIL 1201 Ethics of Life and Death
PHIL 2201 Introduction to Ethics
PHIL 2203 Business Ethics
PHIL 2206 Environmental Ethics (students can receive credit for only one of PHIL 2206, PHIL 3206, or PHIL 3208)
PHIL 2208 Military Ethics
PHIL 2209 Health Care Ethics in Canada (cannot take both PHIL 2209 and PHIL 3207 for credit)
PHIL 3205 Contemporary Ethical Theory
PHIL 3207 Health Care Ethics (students can receive credit for only one of PHIL 2209 and PHIL 3207 for credit)
PHIL 3208 Ecological Ethics (students can receive credit for only one of PHIL 2206, PHIL 3206, or PHIL 3208)
PHIL 3302 Later Greek Philosophy
PHIL 3306 Kierkegaard, Nietzsche, and the Roots of Postmodern
PHIL 3308 Plato's *Republic*
PHIL 3312 Infinity: Emmanuel Levinas' Encounter with the Other
PHIL 3315 Hannah Arendt and S. de Beauvoir
POLS 1503 Law, Power and Politics
POLS 1603 Politics of Globalization
POLS 2503 Women & Politics
POLS 3103 Right in Conflict in North America
POLS 3715 Critique of Alienation in Social & Political Thought
POLS 3718 International Security in Theory and Practice
POLS 3415 Liberalism
POLS 3433 Late Modern Political Thought
POLS 4463 Eros & Leadership
POLS 4496 Thucydides: War and Empire
POLS 4495 Gender and War: History and Contemporary Persepectives
SOCI 3004 Theoretical Foundations of Sociology
SOCI 2365 Sociology of Death and Dying
SOCI 3623 White Collar Crime
SOCI 3371 The Institution of Health Care
SOCI 3533 Social Stratification
SOCI 4513 Inequality and Social Justice
SOCI 3636 Restorative Justice
SOCI 3635 Conflict Resolution
SOCI 4624 Health Care in International Context

FAMILY VIOLENCE ISSUES CERTIFICATE PROGRAM

The FVI Certificate is granted upon completion of eight (3 credit hour) courses related to the study of family violence with a minimum grade of C in each course. The program is offered by the Muriel McQueen Fergusson Centre for Family Violence Research at UNB, but the courses listed below are offered through various departments and faculties.

The FVI Certificate includes three different groupings of courses based on the proportion of material covered in the course that is directly relevant to issues of family violence: core courses (all material considered relevant); intensive courses (at least 60% of the material considered relevant); and supplementary courses (at least 30% of the material considered relevant). While students will choose a mix of core, intensive and supplementary courses, it is required that they choose a minimum of 3 core courses, and a maximum of 3 intensive courses, along with 2 supplementary courses.

Students interested in being admitted into the Family Violence Issues Certificate Program make an application to the Director of the Muriel McQueen Fergusson Centre for Family Violence Research. Admittance is based on the student's academic performance and any related employment or volunteer experiences.

Students completing the FVI Certificate are able to count those courses taken in conjunction with a Minor, Major, Honours, Double Major, or Joint Honours program towards the FVI requirements.

Not all these courses will be offered in any given academic year

Core Courses (Choose at least 3 courses from this category)	Intensive Courses 60% relevant content	Supplementary Courses 30% relevant content

	(Choose up to 3 courses)	(Choose up to 2 courses)
FVI 2001/SOCI 2001 Introduction to Family Violence Issues	ARTS 3001 or ARTS 3002 or ARTS 3000 or ARTS 4000 Arts Internship	ANTH 3114 Gender, Sex and Culture
FVI 3006/SOCI 3006 Intervention Strategies and Programs for People who Batter	GWS 1003 Introduction to Gender and Women's Studies I	ANTH 3523 Forensic Anthropology
FVI 3007/SOCI 3007 Religion and Family Violence Issues	GWS 2003 Introduction to Gender and Women's Studies II	ANTH 4204 Gender, Kinship and Marriage
FVI 3634/SOCI 3634 Violence Against Women	GWS 4004 Seminar in Gender and Women's Studies	ANTH 4502 Issues in Medical Anthropology
FVI 4002 Multidisciplinary Approaches to Family Violence	GWS 4900 Honours Thesis in Gender and Women's Studies	ANTH 4702 Gender and Health
SOCI 4337 Legal Responses to Family Violence	PSYC 3253 Family Process	CCS 3062 Love and Religion: Latin America and Caribbean Women's Narrative from Golden Age to the Beginning of the 20th Century
	SOCI 2563 Violence and Society	CCS 3666/SOCI 3666 Icons of Non-Violence I
	SOCI 2303 Sociology of Families	CCS 4062 Span & Lat Amer Women Artists
	SOCI 4336 Familes, Law, and Social Policy	CLAS 3913 Gender and Power in Ancient Greece and Rome
	PSYC 3253 Family Process	CLAS 4333 Living in Ancient World: Greek and Roman Housing
		ENGL 3583 The Women Novelists of Britain (1900 to Today)
		ENGL 3883 Women's Writing in English
		ENGL 3585 The Body in Modern British Literature
		ENGL 3813 Literatures of Africa, the Caribbean, and South Asia
		HIST 1007 History of the Body
		FR 3534 Women's Writing FR 3554 Écrits de femmes
		FR 3536 A History of Women's Writing in France
		FR 3536 Histoire de la literature des femmes en France
		FR 3834 Contemporary Quebecois Women Writers FR 3834 Écrivaines Quebecois contemporaines
		HIST 1007 History of the Body
		HIST 3003 European Women, 1450-1800

		HIST 3025 History and Sexuality: Europe and the World
		HIST 3326 Gender, Health and Medicine
		HIST 4003 Women in Early Modern Atlantic World
		HIST 4313 A History of Women in Canadian Society
		HIST 4808 History of the Canadian Forces 1953-Present
		HIST 5007 Gender and Sexuality in the 20th Century Europe
		HIST 5605 Freedrom on Trial: Slavery, Violence, and the Law
		HIST 5103 Gender, Race, and Disease in Early Modern Arltantic History
		HIST 5330 Class, Gender, and Religion in Atlantic Canada
		HIST 5353 Canadian Women's History
		MAAC 3055 Gender, Women, and Media
		POLS 2503 Women and Politics
		POLS 3443 Feminist Issues in Political Thought
		POLS 4495 Gender & War: Historical and Contemporary Perspectives
		PSYC 3033 Health Psychology
		PSYC 3043 Human Sexuality
		PSYC 3263 Psychology of Women
		PSYC 3443 The Psychology of Crime
		PSYC 3453 Close Relationships
		PSYC 4223 Topical Seminar in Sex and Gender
		SOCI 1543 Men and Women: Then and Now
		SOCI 1593 Hooked on Religion
		SOCI 1603 Introduction to Criminology
		SOCI 2313 Sociology of Women
		SOCI 2343 Sociology of Aging
		SOCI 2365 Sociology of Dying and Death
		SOCI 3335 Religion, Gender and Society
		SOCI 3371 The Institution of Health Care
		SOCI 3403 Individual and Society
		SOCI 3543 Sociology of Gender Relations
		SOCI 4263 Sociology of the Body
		SOCI 4513 Inequality and Social Justice

CERTIFICATE IN FILM PRODUCTION

The Certificate in Film Production is designed to help students develop expertise in all the areas of film, including screenwriting, acting, directing, and producing as well as the technical aspects of film and digital video production. Students participate fully in the production structure of film-making in a variety of positions, such as camera operator, cinematographer, director, and screenwriter, in addition to gaining hands-on experience in the post-production process of picture and sound editing. The program also covers basic film studies, including the history of film, because students making films learn from watching other films and analyzing how they work. The broad range of the program not only prepares students for a variety of positions but also helps them in making informed choices in pursuing opportunities or specialized training.

The Certificate in Film Production can be taken as a stand-alone certificate program or in conjunction with a degree program, with the approval of the appropriate Faculty. Students interested in majoring in Film Production should consider instead the Film Production option in the Media Arts & Cultures program.

Candidates for admission to the Certificate Program must meet the university's requirements for admission to the Bachelor of Arts or for admission as a mature student. Enrolment in the Certificate in Film Production is limited. The stand-alone certificate is a part-time program. Students with limited or no university background who are enrolled in the stand-alone certificate should bear in mind that some upper-level courses have prerequisites that must be met, and, where appropriate, should consider taking advantage of the university's writing and skills development programs.

Some courses for the Certificate in Film Production may be scheduled in late afternoon or evening time slots.

Program Structure
The Certificate in Film Production program consists of 30 credit hours. Of these, 24 credit hours are from required courses; the remainder is from electives. Normally, a grade of C or better is required for each course in the program.

Required Courses (24 credit hours)
FILM 2022 / MAAC 2022 The Art of Film (3 ch)
FILM 2909 / ENGL 2909 International Film History (3 ch)
FILM 2998 / MAAC 2998 Digital Film Production I (3 ch)
FILM 2999 / MAAC 2999 Digital Film Production II (3 ch)
FILM 3903 / ENGL 3903 Film Theory (3 ch)
FILM 4000 / MAAC 4000 Digital Film Production III (6 ch)
At least one of FILM 3183/ENGL 3183 Creative Writing: Screenwriting for Short Formats (3 ch) and FILM 3186/ENGL 3186 Creative Writing: Feature Screenplay (3 ch). The other may be taken as one of the two electives.

Electives (6 credit hours must be selected)
ENGL 2263 Shakespeare and Film (3 ch)
FILM 3066/CCS 3066/MAAC 3066 Trauma and Seduction: Early German Cinema (3 ch)
FILM 3072/CCS 3072/MAAC 3072 Contemporary German Cinema and Media (3 ch)
FILM 3075/MAAC 3075 Framing Reality: Theory and Practice of Documentary Media (3 ch)
FILM 3082/MAAC 3082/CCS 3082 History of Canadian Cinema (3 ch)
FILM 3907 / ENGL 3907 Film Genre (3 ch)
FILM 3908 / ENGL 3908 Zombies in Film (3 ch)
FILM 3916 / ENGL 3916 Canadian Film since 1967 (3 ch)
FILM 3917 / ENGL 3917 National Cinemas (3 ch)
FILM 3918 / ENGL 3918 The French New Wave (3 ch)
FILM 3999 / MAAC 3999 Editing and Post-Production (3 ch)
HIST 1315 Canadian History on Film (3 ch)
HIST 3415 America at the Movies (3 ch)
HIST 3803 War through Film (3 ch)
MAAC 3212 Lens Media I (3 ch)
MAAC 3362 Sound Design (3 ch)
CCS 3455 Latin American Cinema (3 ch)
CCS 3456 / SPAN 3456 The Cinema of Spain (3 ch)
Other film-related university courses may be approved as electives by the Film Production Certificate Advisor.

CERTIFICATE IN PUBLISHING

FACULTY of ARTS

General Information:	c/o Department of English, Carleton Hall Room 247
Mailing Address:	Faculty of Arts, University of New Brunswick P.O. Box 4400 Fredericton, NB Canada, E3B 5A3
Phone:	(506) 453-4978
Email:	cert.publish@unb.ca
Website:	http://www.unb.ca/fredericton/arts/undergrad/ cert_in_publishing.html
Director:	Dr. John C. Ball, Professor, Department of English

Faculty

- Ball, John C., BA, MA, PhD (Tor), Prof - 1995, English
- Dutcher, Stephen, BA, MA, PhD (UNB), Adjunct Prof - 2016, History
- Finlay, Tatrina, BA (Mt. Allison), MA (UNB), Associate Teaching Prof - 2008, English
- Huebert, David, BA (Dal-King's), MA (UVic), PhD (UWO), Asst Prof - 2021, English
- Mancke, Elizabeth, BA (CCollege), MA (UBC), MA, PhD (Johns Hopkins), Canada Research Chair, Prof - 2012, History
- Mullally, Sasha, BA, MA (Ottawa), PhD (Tor), Assoc Prof – 2009 - History
- Sinclair, Sue, BA (Mt. Allison), MA (UNB), MA, PhD (Tor), Asst Prof - 2016, English

General Information

UNB's Certificate in Publishing program is designed to prepare students for work in the publishing industry. The program is intended to complement a wide range of Majors offered at UNB. It offers a combination of classroom instruction, online instruction, and experiential learning and may be taken concurrently with a UNB degree program. UNB is one of the very few Canadian universities to have founded and continuously published three internationally respected journals in the Arts and Humanities - *The Fiddlehead*, *Acadiensis*, and *Studies in Canadian Literature*. This long experience, coupled with expertise in editing journals that are based elsewhere, makes UNB's program unique.

Admission Requirements

The program is open to students enrolled in a UNB undergraduate degree program, with priority given to Arts students. Students must have completed 30 ch to be formally admitted to the program. Students may take the core courses - PUB 2103 The Evolving Publishing Environments (3 ch), PUB 3103 Practical Editing Skills (3 ch), and PUB 3104 Production & Management Fundamentals for Print & Digital Publishing (3 ch) - before applying to be admitted into the program.
Interested students should make an appointment to meet with the Director. Admissions is limited to 12 students per year in order to enable placement in the required 6 ch of internships. Applications are available from the Director, and students are chosen on the basis of a statement of interest and their GPA.

Program of Study

The Certificate in Publishing consists of 24 ch, comprising 15 ch of required courses and 9 ch of electives chosen from the list below. Undergraduate students may begin the Certificate in their second year or later. While students may be able to complete the program in one academic year (September to August), they are advised to spread it over two years. Courses taken to fulfill a student's degree or program requirements may also count as Certificate in Publishing electives.
The core curriculum consists of three 3 ch courses that focus on the fundamentals of publishing: the evolving publishing environment in Canada; how to acquire, assess, and edit manuscripts for publishing; and how publications are produced, with a focus on design and management fundamentals.
Internships build on the core curriculum. Students take either one 6 ch or two 3 ch internship courses. Placements are made at our three journals, or at other businesses and organizations with publishing activities, on campus and off campus. These placements give students hands-on experience in various aspects of publishing covered in the core courses. Students who have taken an ARTS 3000 or ARTS 4000 Internship that complements the Certificate in Publishing may request consideration for it to count towards the internship requirement.
Students also choose 9 ch of electives from UNB's other courses; these are intended to support students' knowledge of the theory and context of their core courses and internship experiences. Students shall take those credits in at least two different disciplines. Elective courses are chosen for their coverage of topics, methods, or practices related to publishing and communication, or to the production, dissemination, and marketing of knowledge in various media. With the approval of the program director, other courses, including Honours seminars and transfer credits, may serve as electives.

Required Courses (15 ch)

PUB 2103 The Evolving Publishing Environments (3 ch)
PUB 3103 Practical Editing Skills (3 ch)
PUB 3104 Production & Management Fundamentals for Print & Digital Publishing (3 ch)
PUB 3000 Publishing Internship (6 ch)

BACHELOR OF ARTS AND SCIENCE (BAS)

The Faculties of Arts and Science at UNB in Fredericton are co-operating to make it possible for a student to combine Arts and Science in this four-year degree program.
This Joint Program allows students

- to experience academic work in both Faculties before committing themselves to a specialization;

With approval, a publishing-related ARTS 3000 / ARTS 3001 / ARTS 3002 or ARTS 4000 internship may be counted in lieu of PUB 3000 / PUB 3001 / PUB 3002.

Elective Courses (9 ch)

ADM 1313 Principles of Marketing (3 ch)
ADM 2315 Marketing Management (3 ch)
ANTH 3346 Public Archaeology (3 ch)
ENGL 1103 Fundamentals of Clear Writing (3 ch)
ENGL 2195 Introduction to Creative Writing: Poetry and Drama (3 ch)
ENGL 2196 Introduction to Creative Writing: Fiction and Screenwriting (3 ch)
ENGL 2197 Travel Writing (3 ch)
ENGL 2603 Literature of Atlantic Canada (3 ch)
ENGL 2605 Introduction to Indigenous Literatures of the Wabanaki Confederacy/Atlantic Region (3 ch)
ENGL 2608 Introduction to Contemporary Canadian Literature (3 ch)
ENGL 3103 Creative Writing: Studio Course (3 ch)
ENGL 3123 Creative Writing: Poetry (3 ch)
ENGL 3143 Creative Writing: Short Fiction (3 ch)
ENGL 3153 Creative Writing: Non-Fiction (3 ch)
ENGL 3605 Indigenous Literatures of Turtle Island: A Historical Survey to the Present (3 ch)
ENGL 3606 Indigenous Literatures since 1970 (3 ch)
ENGL 3698 Canadian Literature since 1970 (3 ch)
FR 3844 Immigrant Writing in Quebec/Écriture migrante au Québec (3 ch)
FR 3854 Acadian Literature/Littérature acadienne (3 ch)
FR 3894 The Contemporary French-Canadian Novel/Le roman canadien-français contemporain (3 ch)
HIST 1415 "Cowboys and Indians"? A History of Native People in Canadian and American Popular Culture (3 ch)
HIST 3736 Art for a Nation? Visualizing Twentieth-Century Canada (3 ch)
HIST 5388 Understanding the Virtual Past; Making Digital History (3 ch)
HIST 5725 The Art of Public History (3 ch)
MAAC 1001 Understanding Media I: Technology and Culture (3 ch)
MAAC 1002 Understanding Media II: Power and Pleasures (3 ch)
MAAC/CCS 1021 Introduction to Culture, Arts, and Media (3 ch)
MAAC 1023 Media, Technology, and Creativity (3 ch)
MAAC/CCS 2021 Popular Culture (3 ch)
MAAC 2998 Digital Film Production I (3 ch)
MAAC 2999 Digital Film Production II (3 ch)
MAAC 3057 Advertising and Consumer Culture (3 ch)
MAAC 3101 Media Design I (3 ch)
MAAC 3102 Media Design II (3 ch)
MAAC 3211 Mobility, Media, and Art (3 ch)
MAAC 3212 Lens Media I (3 ch)
MAAC 3213 Lens Media II (3 ch)
MAAC 3401 Digital Culture (3 ch)
MAAC 3431 Global Media, Politics, and Power (3 ch)
MAAC 3435 Media and Culture (3 ch)
PSYC 3063 Psychology and the Internet (3ch)
PSYC 3413 Introduction to Industrial/Organizational Psychology (3 ch)
SOCI 2223 Introduction to Mass Communications and the Media (3 ch)
SOCI 2533 Information Society (3 ch)
SOCI 3253 Sociology of Media (3 ch)
When choosing electives and internships, students may wish to consider concentrating in one of the following areas:
1.   Literary & Trade Publishing
2.   Academic Publishing
3.   Public Outreach & Communications
4.   Production, Design & Digital Media
5.   Business & Marketing for Publishing

ARTS AND LAW

Students may be admitted to the Faculty of Law after they have successfully completed three years of the BA program. For further information regarding admission to the Faculty of Law, please consult the Faculty of Law Calendar or visit the Faculty of Law website at https://www.unb.ca/fredericton/law.
Students accepted into the Law program must actually complete the major, double-major, honours or joint honours courses required by their discipline(s), as time permits. Only approved LAW courses will count as upper level electives for the BA, and students may count a maximum of 12 ch towards the BA.
Students will normally graduate with both the BA and LL.B. at the same time.

- to gain a broader and more systematic exposure to disciplines outside that specialization; and
- to prepare for subsequent degree programs that permit or encourage a broader distribution of courses; such programs include the General Science Program and various preprofessional programs leading to

study in dentistry, medicine, veterinary medicine, optometry, and physiotherapy.

To be admitted to the Joint Arts and Science program, students must meet the entrance requirements for the BAS as outlined in the Admission Requirements Table under Admission Regulations.

To earn a BAS degree, students must complete the requirements of a Supplementary Major in an Arts subject and a Specialization in a Science subject. The requirements for a Supplementary Major are the same as those for one subject taken as part of a Double Major.

Within Science, students can specialize in one of the following subjects: Biology, Chemistry, Earth Sciences, Mathematics and Statistics, Physics, Economics (unless already selected as an Arts program), Psychology (unless already selected as an Arts program). Within Arts, students can select a Supplementary Major in one of the following areas: Anthropology, Archaeology, Classical Studies, Classics, Drama, Economics, Economics Studies, English, French, German, German Studies, History, International Development Studies, Law in Society, Media Arts & Cultures, Philosophy, Political Science, Psychology, Sociology, Spanish, Gender and Women's Studies, Comparative Cultural Studies.

Program of Study
First Year

1. ARTS 1001 and ARTS 1002 Development of "Western" Thought: Parts 1 and 2. Note that students who have successfully completed either ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 and ARTS 1002 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or 1053 included), 4 accompanied by labs. The choice of lecture and lab courses is dictated by the particular area of Science in which the student intends to specialize, and thus decisions about which lecture and lab courses a student takes should be made in consultation with a Science Faculty advisor.
3. 6 ch (in any one discipline) chosen from either Humanities (Classics, English, History, Media Arts & Cultures, Philosophy, Comparative Cultural Studies), Languages (Ancient Greek, Chinese, French, German, Japanese, Latin, Modern Greek, Russian, Spanish), or Social Sciences (Anthropology, Archaeology, Economics, Political Science, Psychology, Sociology).

Second Year

1. Two additional term lecture courses in first-year Science. Whether these need to be accompanied by labs depends upon the area of Science the student has chosen to specialize in, and as such, these courses should be chosen in consultation with a Science Faculty advisor.

BACHELOR OF APPLIED ARTS (CRAFT AND DESIGN)

GENERAL INFORMATION
This four-year articulated degree program offers a unique combination of academic and practical study, offering the advanced reasoning, research, and writing skills of a traditional liberal arts education at UNB along with the hands-on experience of studio art courses offered by the New Brunswick College of Craft and Design, one of Canada's most respected fine craft and design schools.

Eligibility
Admission to the Bachelor of Applied Arts (BAA) program is through the University of New Brunswick. Applicants must meet the admission requirements for the BA degree and will follow the normal admission procedures of the University of New Brunswick. Students must indicate on both admission forms which institution they wish to attend first. Deadline to apply is March 31.

Prospective applicants and students wishing to transfer into the program with advanced credit should contact the office of the Dean of Arts or the BAA program advisors at either UNB or the New Brunswick College of Craft and Design.

Program of Study
The BAA is a four-year degree program, two years of which are taken at the New Brunswick College of Craft and Design (NBCCD) and the remaining two years (60 ch) at the University of New Brunswick Fredericton (UNBF). The two required years at NBCCD will generally consist of the Foundation Visual Arts Certificate and the first year of the Diploma in Fine Craft. Students may start at either institution, may attend each school in alternate years, or complete the requirements of one before moving on to another.

Year 1 at UNB
The first year consists of 24 ch at the first-year level and 6 ch at either the first-year or second-year level. Students may be advised to take certain courses that relate to their interest in craft and design, to their future career plans, and/or to upper-level courses they plan to take in Year 2 at UNB.

Courses are required as follows:

2. 12 ch (6 ch in each of 2 disciplines) chosen from Arts, including at least one discipline from a group (Humanities, Languages, Social Sciences) not chosen in the first year.
3. At least 18 ch of Science courses chosen in consultation with and pre-approved by the Science Faculty advisor.

Students will normally select a Supplementary Major in Arts and a Specialization in Science at this time, and should discuss the options with their Arts and Science advisors.

Third and Fourth Years
The exact content of years 3 and 4 will depend upon the particular Arts and Science areas chosen. Students take advanced courses to give them a thorough understanding of their chosen subjects and prepare them for an immediate career or further work at graduate school. Students who elect to take a Single Major or Honours in Arts and/or Science may extend their program beyond the four years, depending on the subjects chosen.

1. A minimum of 36 ch total in Science chosen in consultation with, and pre-approved by, the student's Science advisor. At least half of these courses must be at the 3000 or 4000 level.
2. 36 ch total chosen in consultation with, and pre-approved by, the student's Arts Major advisor, 18 ch of which must be at the 3000 or 4000 level.

Students should note that at least half the advanced-level credits counted towards the BAS degree must be from courses taken at the University of New Brunswick. Exceptions may be considered by the Deans of Arts and Science. Students should also note that, in any given year, their course load may not be evenly balanced between Arts and Science courses. Students should plan to meet with advisors from both Faculties on an annual basis to ensure that the selected courses satisfy *Prerequisites* for upper level courses and take account of courses offered in alternating years, and other program requirements.

Students who enter the BAS program may opt to move into the BA program, the BSc program, or the concurrent BA/BSc program at any stage. With the exception of laboratory courses, and SCI 1001 and SCI 1002, all courses taken during the first two years can be counted towards either a BA or a BSc degree (or both). Approved specialized Science laboratory courses will count towards the BSc degree or the Concurrent Degree in Arts and Science (BA/BSc).

Instead of graduating with a BAS at the end of the four-year program, students may continue for a fifth year to earn both a BA and a BSc, two degrees, with a Major (or Honours) in an Arts discipline and a Major (or Honours) in a Science discipline - for example, BA (History) and BSc (Physics). See the following section for the five-year concurrent degree program in Arts and Science.

For further details on subjects in Arts, see the <u>Bachelor of Arts</u> portion of the Fredericton Programs section of this Calendar.

- ARTS 1001 and ARTS 1002 (6 ch). Note that students who have successfully completed ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 and ARTS 1002 for credit.
- 6 ch in each of three disciplines chosen from the four groups of disciplines (A, B, C, D) listed below (18 ch).
- The remaining 6 ch may be taken in any Arts or Science discipline, or taken as 3 ch in each of two disciplines, including those already being taken this year; the course(s) in this category may be at either the first-year or second-year level. In addition to disciplines listed in groups A-D, students may take courses in Drama, Film, Music, Gender and Women's Studies, or International Development Studies to meet this requirement (6 ch).

A (Languages)[1]	B (Humanities)	C (Social Sciences)	D (Sciences)[2]
Chinese	Classics	Anthropology	Astronomy
French	English		Biology
German	History	Economics	Chemistry
Greek (Ancient)	Media Arts & Cultures	Political Science	Computer Science
Greek (Modern)	Philosophy	Psychology	Earth Sciences
Japanese	Comparative Cultural Studies	Sociology	Mathematics
Latin			Physics
Russian			Statistics
Spanish			

NOTES:

1. Other languages such as Arabic, Wolastoqey, and Mi'kmaq (when available) may be taken to satisfy the requirements of Group A.

361

2. Lower level laboratory courses taken in other Faculties will not be counted in the credit hour total but will be counted in the calculation of the Grade Point Average (GPA) for the BA program.

Year 2 at UNB

The second year at UNB consists of 30 ch of lecture courses or seminars, of which at least 24 ch must be chosen from the 3000-4000 level in consultation with the program advisor. Normally, students may not take independent study, reading, or thesis courses. The course selection should support the student's interest in craft and design. Courses required are as follows:

- 12 ch in Cultural Studies and Art History
- 6 ch in humanities, social sciences, fine arts
- 6 ch in skill development: math, language, multimedia, science, English (creative or expository writing)
- 6 ch optional from any of the above or others as approved

Year 1 and Year 2 at NBCCD

For more information on the program at NBCCD please see NBCCD Programs overview (https://nbccd.ca/programs/bachelor-applied-arts).

BACHELOR OF BUSINESS ADMINISTRATION

FACULTY OF MANAGEMENT

General Information:	Singer Hall, Room 255
Mailing Address:	Faculty of Management, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4869
Fax:	(506) 453-3561
Email:	fom@unb.ca
Website:	https://www.unb.ca/management

FACULTY

Dean: Devashis Mitra, BA, PhD, CA, FCA

Associate Dean (Research & Graduate Studies): Jeffrey J. McNally, BA, MA, PhD

Associate Dean (Strategic Initiatives): Martin Wielemaker, BSc, MSc, PhD

Associate Dean (Undergraduate Programs): Joseph Y. Abekah, BScAdmin, MSc, MAc, PhD

- Abekah, Joseph Y., BScAdmin (Ghana), MSc (Boston), MAc (BGSU), PhD (Neb.-Lincoln), Prof and Assoc Dean (Undergraduate Programs) - 1991
- Angeles, Rebecca, BA (Philippines), MBA (South Dakota), PhD (Memphis), Prof - 2003
- Bruning, Patrick, BA, MSc (Manit), PhD (Purdue), Assoc Prof - 2014
- Chawla, Akhila, BComm (University of Delhi), Post-Graduate Diploma in Management (Symbiosis Institute of Management Studies, Pune, India), MBA (Concordia University), Asst Prof - 2015
- Cziffra, Johnathon, BComm (McGill), MSF (Qu.), PhD (Montreal), CPA, CA, Asst Prof - 2019
- Densmore, Michael, BBE, MSc (Brock), PhD (York), Asst Prof - 2021
- Du, Donglei, BSc (Fudan), MSc (Shandong), PhD (Chinese Acad of Sci), PhD (Texas), Prof - 2003
- Dunnett, A. Jane, BSc, MBA (UNB), PhD (Qu.), Assoc Prof - 2000
- DuPlessis, Dorothy R., BComm, LLB, MBA (Dal), LLM (Lond), Prof - 1982
- Eiselt, H. A., BA (Hannover), MBA, PhD (Georgia Augusta), Prof - 1986
- Flint, Douglas H., BA (S. Fraser), MSc (McM.), MASc (Wat.), PhD (Tor), Prof - 2001
- Foord, David, J.A., BA (U. of Regina), BLaw (Dal.), PhD (UNB), Asst Prof - 2020
- Frooman, Jeffrey, BS, BA (Ill-Urbana), MBA (Mich), MA, PhD (Pitts), Assoc Prof (Cross-Appt, Arts) - 2007
- Gajurel, Dinesh, LLB, MBS, MBA (Tribhuvan-Nepal), PhD (Tasmania), Asst Prof - 2007
- Grant, E. Stephen, BBA (UNB), MBA (Maine-Orono), PhD (Memphis), Prof and Act Assoc Dean (Undergraduate Programs) - 1993
- Haley, Lynn M., BSc, MBA (UNB), Sr. Teaching Assoc - 2005
- Lan, Chunhau, DSc (Washington U in St. Louis), PhD (Boston College), Asst Prof - 2018
- Leonard, R. Glenn, BBA, MA, PhD (UNB), CPA, Assoc Prof - 2006
- Li, Wan, BEnMgmt, Mgmt (Xi'an Jiaotong U.), PhD (York), Asst Prof - 2019
- Lin, Hsin-Chen, BS, MS (National Taipei U.), PhD (Purdue), Asst Prof - 2014
- Lynch, Eamonn, BComm (Victoria), MSc (Leth), MBA (McG), DipUT (UNB), Sr Instructor - 2005
- McNally, Jeffery J., BA (Mt. A), MA (UWO), PhD (McM.), Asst Prof - 2010
- Mitra, Devashis, BA (Delhi), PhD (Mass-Amherst), CA, FCA, Prof and Dean - 1991
- Musaji, Serghei, B.Bnkg & Fin (Romania), MIB (Romania), MRM (Spain), PhD (Spain), Asst Prof - 2020
- Nicholls, Shane, BBA (Brock), MScM (Brock), PhD (Concordia), Asst Prof - 2020
- Rahim, Abdur M., BSc, MSc (Dacca), DS (Rome), MSc (Ott), PhD (Windsor), Prof - 1983
- Rashid, Muhammad, MA (York), PhD (Qu), Prof - 1985
- Shaikh, Ibrahim A., BA (California Riverside), MA (California State University Fullerton), Asst Prof - 2015
- Shamsi, Azam, BSc (U. of Tehran), MSc (Sharif U. of Tech), PhD (McMaster), CFA, Asst Prof - 2018
- Sharma, Basu D., BA, MA (Tribhuvan), AM, PhD (Ill-Urbana), Prof - 1985
- Sheppard, Reginald G., BEd, BSc, BA (MUN), MEd, MBA (UNB), PhD (Bath, UK), Assoc Prof - 1999
- Tajbakhsh, Alireza, BSc (U. of Tehran), MSc (Sharif U. of Tech,), PhD (McMaster), Asst Prof - 2019

- Tucker, Suzanne, BBA, MBA (UNB), CPA, CMA, FCPA, FCMA, Senior Instructor - 2016
- Wielemaker, Martin, BSc (UBC), MSc (Tech. Univ. Delft), PhD (Erasmus), Assoc Prof and Assoc Dean (Strategic Initiatives) - 2002

General Information

Through the cooperation of New Brunswick business firms and professional associations, the Department of Business Administration was created in the Faculty of Arts during 1951 to service the needs of Canadian business for men and women with specialized training in the field of management. A School of Administration superseded the Department in 1975 and the Faculty of Administration was established during 1980. The name was modified to the Faculty of Business Administration in 2005. The current name, Faculty of Management, commenced on July 1, 2019. The Faculty's operations since 1987 have been based in Ethel Francis Singer Hall, a building named in memory of the first Jewish woman (BA'35, MA '38) to graduate from the University of New Brunswick.

The four-year program leads to the degrees of Bachelor of Business Administration (BBA) or Honours BBA. The course of studies is designed to ensure that students receive a broad-based education, by requiring a variety of courses from across the University, as well as courses from the functional areas within the Faculty of Business Administration. Students will be made aware of the economic and environmental context within which modern business operates, as well as learning about administrative principles and practices.

Business Administration courses include accounting, finance, general management, human resource management, law, management information systems, marketing, operations management, organizational behaviour, and quantitative analysis. Lectures, class discussions, laboratory work, essays, and case studies are used depending upon the requirements of the subject.

1. Business Administration and Accounting

Candidates who are considering entering the accounting profession are invited to discuss the matter with members of the Faculty. A student may also write to:

CPA New Brunswick
860 Main St., Suite 602, Moncton N.B. E1C 1G2

2. Business Administration and Law

BBA students who have completed three years of the BBA program may be admitted to the Faculty of Law and may qualify for the BBA degree by successfully completing the first year of the Law program. In order to qualify for the BBA, the students must have credit for all of the REQUIRED courses specified for the BBA degree, with the exception of ADM 3123. Students must apply to and be accepted by the Faculty of Law.

3. Graduate Study in Business Administration

The Faculty of Management offers an MBA (Master of Business Administration) degree program. Information regarding the program may be obtained from the School of Graduate Studies (and from the MBA office at the Faculty of Management).

Most universities in Canada and in the United States which offer graduate programs in Business Administration (MBA, MPA, etc.) require applicants to submit the results of the Graduate Management Admission Test. Students who think they might wish to enter a graduate program in Business Administration should arrange to write this test in their senior year.

An undergraduate degree in business administration is not required for admission into the MBA program.

4. Graduates of A Community College or Equivalent System

Students who have completed or partially completed such programs may be granted credits toward the BBA. Entering students will be advised of their status, as provided for in the General Regulations of the University.

5. University Regulations

Any point not covered in the following regulations will be governed by the General University Regulations in Section B of this Calendar. Questions concerning the regulations should be directed to the Registrar in writing.

Conditions Regarding Admission to the BBA Program

All admissions are on a competitive basis and are subject to availability of space. Satisfaction of minimum requirements does not guarantee admission.

A student who is not registered in the BBA program may not take more than 24 ch of ADM courses without approval from the Faculty of Management.

Transfer Students

A student's scholastic record normally must satisfy the general admission requirements of the Faculty of Business Administration specified in Section B.1.

A minimum cumulative GPA of 2.0 normally is required for a student to be considered for transfer into one of the Faculty's programs.

A student normally will not be allowed to transfer into the Faculty mid-way through the academic year.

Application is by special form available from the Registrar's Office and must be submitted to the Registrar's Office by 31 March.

Upon admission, transfer students must take ADM 1192 during their first term of studies.

6. BBA for Students with another Bachelor's Degree

(See also Requirement for a Second Undergraduate Bachelor's Degree, Section B of this Calendar)

Students who obtained a GPA. of 3.0 or better in their undergraduate degree program should consider applying for the MBA program (see Section 3).

A. Graduates of UNB and Other Universities

Graduates of UNB are required to complete successfully a minimum of 30 additional ch and to have credit for all the required courses (or their equivalent) in the BBA program. In addition, students must maintain a session grade point average of at least 2.0 (see Section 8 on Degree Standing on Graduation below).

Graduates of other recognized universities must also have credit for all of the courses specifically required for the BBA but must, in addition, have successfully completed a minimum of 60 ch for the BBA degree or 63 ch for the Honours BBA degree at UNB. In addition, students must maintain a session grade point average of at least 2.0 (see BBA Regulations 7D, 7E and 8.)

B. Degree Standing on Graduation

Students taking the BBA program as a second degree may graduate with First, Second, or Third Division standing but not with Distinction.

i. Students who have a UNB undergraduate degree and are thus required to take a minimum of 30 additional ch (and to have credit for all the required courses in the BBA program) will have their division standing calculated on the basis of all the courses they take while registered for the BBA degree, plus all of the required courses for the BBA for which they received grades from UNB in their other undergraduate degree at UNB.

ii. Students whose first undergraduate degree is from another university are required to complete at least 60 additional ch and to have credit for all required courses in the BBA program. Their division standing will be calculated on all of the courses they have taken while registered at UNB.

7. BBA Regulations

A student who had been registered in the BBA program and who withdrew while on probation or who was required to withdraw from the program will not be eligible to re-enter the program without the approval of the Faculty of Management.

The regulations in respect to the BBA degree are expressed in terms of letter grades, credit hours and grade point averages. These are referred to below.

A. Letter Grades

A candidate's final standing in a course is indicated by one of the letter grades stated in Section B (Grading System and Classification) of this Calendar. A grade of C or better meets the prerequisite standards for Business Administration courses.

B. Credit Hours

The number of credit hours assigned each course is stated in Section F of this Calendar. Due to differences in the methods used by the various Faculties in the calculation of credit hours, students who elect to register for courses taught outside of the Faculty of Management should note the following:

i. For purposes of the BBA degree, any course taught outside of the Faculty of Management, which has a course number ending in zero and which is taught over the full academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught, up to a maximum of 6.

ii. For purposes of the BBA degree, any course taught outside of the Faculty of Management, which has a course number ending in other than zero and which is offered in one term of the academic year, will receive the number of credit hours normally assigned by the Faculty in which the course is taught up to a maximum of 3.

C. Grade Point Averages

i. The method of calculating grade point averages is explained in Section B (Grading System and Classification) of this Calendar.

ii. Students registered in the BBA program must maintain an assessment grade point average of at least 2.0 throughout the program. (See Section B of this Calendar for further details of GPA. standing and promotion requirements).

iii. To earn a degree, a student must have successfully completed at least 120 ch (see Section 10) in approved courses. A grade of at least C must be attained in all the courses specifically required for the degree.

iv. Laboratory courses normally will not be counted in the ch total or in the calculation of the grade point average.

D. Credits Required at UNB

At least 60 ch for the BBA degree must be taken at UNB and must normally include all the required courses in the BBA degree program. (Under extraordinary conditions, a student may be permitted to take some of those courses elsewhere with the prior consent of the Faculty of Management and the Registrar.)

E. Changes in Degree Requirements

Improvements in the BBA program may lead to changes in the requirements for the degree. The University reserves the right to require candidates already enrolled to meet the revised requirements where practicable.

F. Majors and Concentrations

i. A student qualifying for the BBA degree who has met the requirements for a Single or Double Major in the Bachelor of Arts program may apply to the Registrar to have noted on the student's transcript that the Major requirement in the external discipline has been met.

Students are advised that Major programs must be approved by the relevant Department in the Faculty of Arts. Many Business Administration students choose to do a Major in Economics from the Faculty of Arts. The major consists of a minimum of 30 ch in Economics of which 24 ch must be in advanced courses. Business students should note because the Economics Department does not offer its own statistics and quantitative methods courses, that ADM 2623 and ADM 2624 are treated as credits for advanced Economics courses. Required courses include ECON 3013, ECON 3023 and ADM 2623.

ii. BBA students may concentrate in a particular area of Business Administration (Accounting, Entrepreneurship, Finance, Human Resource Management, International Business, Logistics or Marketing) by selecting appropriate optional courses, and meeting additional credit hour requirements. See Section 11.

iii. Students may select a Joint Honours in Finance and Economics by selecting appropriate optional courses. See Section 12.

iv. Students who elect to seek the Honours BBA degree must complete a major in an area of Business Administration. A Major requires the successful completion of at least 24 ch of advanced level courses designated by the Faculty of Management. See Sections 9, 10, and 12.

8. Degree Standing on Graduation

In order to qualify for a degree, a student in the regular degree program must have successfully completed at least 120 ch of approved course work including a grade of at least C in all the courses required for the BBA degree in accord with Sections 9B and 10. A student must complete at least 126 ch of approved course work including a grade of C in all the courses required for the Honours BBA degree and must meet the conditions specified in Sections 9, 10 and 12.

At graduation all successful candidates for the degree of Bachelor of Business Administration shall be listed in alphabetical order within the appropriate degree category as stated below:

A. Distinction

A student who attains a cumulative grade point average of at least 3.8 over the final 60 ch of course work and no grade less than C over the final 90 ch of course work shall graduate with Distinction.

B. First Division

A student who attains a cumulative grade point average of at least 3.5 over all courses attempted in the program at the University shall graduate in First Division.

C. Second Division

A student who attains a cumulative grade point average of at least 2.5 but less than 3.5 over all courses attempted in the program at the University shall graduate in Second Division.

D. Third Division

A student who attains a cumulative grade point average of less than 2.5 over all courses attempted in the program at the University shall graduate in the Third Division.

At graduation all successful candidates for the degree of Honours Bachelor of Business Administration shall be listed in alphabetical order within the appropriate degree category as stated below:

A. First Class Honours

A student who attains a cumulative grade point average of at least 3.6 over the courses of a major subject (see Section 12).

B. Honours

A student who attains a cumulative grade point average of at least 3.0 over the courses of a major subject (see Section 12).

Averages in an Honours subject are calculated on the basis of the minimum number of credit hours required for the major subject and credit hours successfully completed above this minimum are treated as 'non-required' courses.

9. Business Administration Curriculum

A. General Information

1. Choice of program: For Upper level students, two program paths are available: BBA and Honours BBA. Upon the successful completion of 60 ch, students must declare their intent to follow one or the other of these two paths. Their decisions must be made in consultation with the academic advisors of the Faculty of Business Administration. The Honours degree is designed for candidates with a high level of ability who wish to undertake intensive study of an

area within business administration. Students who satisfy the requirements for an Honours degree will have that designation included on their final transcript.

2. Approval of courses: Students are expected to consult with the academic advisors of the Faculty of Business Administration in the development of their program of study. Students must follow the course sequence outlined in this Calendar and complete *Prerequisites* prior to enrolment in intermediate or upper level courses. Approvals for any exceptions to this policy will occur only under extraordinary conditions.

3. The normal course load for all BBA students is 30 ch in each of the first two years of the program. Students who take the BBA degree complete 30 ch in each of the last two years. Students who take the Honours BBA degree must complete a further 6 ch in the last two years.

4. A full-time student is one whose work load consists of a minimum of 9 ch in each term (or 18 ch for two terms in the regular session). Students may enrol for a maximum of 36 ch in any year of the program provided they obtained at least a 2.5 grade point average on at least 30 ch in the immediate preceding year at university. Students who do not obtain at least a 2.5 grade point average on at least 30 ch in the immediate preceding year at university are advised to take no more than 30 ch of course work. Students should take no more than 12 ch per term of course work in a year following placement on academic probation, or upon re-entering university after being required to withdraw. Part-time students are subject to the maximum course loads permitted in Summer Session.

5. Candidates must obtain a grade of at least C in the courses required for the BBA degree. This includes all required Business Administration courses, as well as the Focus or Breadth Option of the program checklist. As outlined below, students who seek to complete a concentration or Major within Business Administration must also obtain a minimum cumulative GPA on the courses designated for the concentration or major (see Section 11).

6. At least 42 ch of electives must be chosen from courses beyond the introductory level. These normally include courses for which there are *Prerequisites*. *Prerequisites* include both specific courses and/or specific credit hour specifications.

7. At least 12 ch of the 42 ch in 9.A.7 must be ADM courses. Students should select those electives in consultation with the academic advisors of the Faculty of Management. The courses should constitute a logical and coherent set of studies.

8. It is the responsibility of a student to ascertain that elective courses are acceptable for BBA or Honours BBA degree credit. Service courses offered by other faculties are not acceptable for degree credit. In addition, various courses (such as those in statistical methods, and TME) duplicate some of the material in required Business Administration courses and will not be accepted for credit. The following courses are not allowed for BBA or Honours BBA credit: CE 3933, CE 3963, CE 3973, CE 5623, ED 3113, ENGG 4013, FE 3233, FE 3603, FE 5252, FOR 3006, ME 3232, PSYC 2113, PSYC 2123, SOCI 3123, and the following STAT courses: 2043, 2253, 2263, 2264, 2283, 2293, 2593.

B. BBA Degree

1. Students taking a BBA must complete at least 120 credit hours (ch) of approved course work and maintain an assessment year grade point average of at least 2.0 in order to qualify for the BBA degree.

2. Students must also complete a 0 credit Professional Development (ADM 4191) requirement before graduation. ADM 4191 includes a Business Information Skills Certificate (offered by the Faculty in partnership with UNB Libraries) and 40 points of professional development activities that they choose from a list of acceptable activities in consultation with their academic advisor. Students are responsible for consulting with their academic advisor with proof on completion of requirements. Advisors must certify completion of the requirements before students can be approved for graduation.

3. Not more than 15 ch of electives in a specific area of Business Administration (Accounting, Finance, Marketing, etc.) may be counted for degree credit.

4. Concentrations are offered in Accounting, Entrepreneurship, Finance, Human Resource Management, International Business, Logistics, and Marketing. (See Section 11).

C. Honours Degree

1. Students must apply for Honours after the completion of 60 ch. Entrance into the Honours BBA requires that a student shall have demonstrated a high level of ability in first- and second-level courses. The Faculty of Management will normally refuse to admit to Honours students whose cumulative GPA is below 3.0 at the completion of 60 credit hours or whose grades in relevant courses are below B. Students should note that admission is competitive and meeting minimum requirements does not guarantee admission.

2. Students taking the Honours BBA path must complete at least 126 ch of approved course work, including at least 24 ch in courses for a designated major within Business Administration. (See Section 12).

3. Students must maintain an assessment year grade point average of at least 3.0 in order to qualify for the Honours BBA. Students also must achieve a cumulative GPA of 3.0 or above on the courses designated for a major.

4. Honours candidates who are able to fulfill the requirements laid down for a Major, in a discipline outside the Faculty of Business Administration, may, if they choose, register for a supplementary Major. Their transcripts will record that they have fulfilled the requirement for a Major in that subject. Registration for the supplementary Major shall normally be completed no later than the completion of 90 ch.

5. Not more than 36 ch of Business Administration electives may be counted for degree credit.

6. Concentrations: Students completing an Honours BBA may also take a concentration in another area of Business Administration but may need additional Business Administration electives in order to complete the concentration (See Sections 11 and 12 below.)

10. Curriculum Requirements

Students are responsible for ensuring that they meet all the requirements specified for the degree. These include the minimum credit hour requirements, grades of at least C in the required courses including the Focus or Breadth Components. A cumulative GPA of 3.0 or above must be achieved on the courses designated for a concentration or a major. Students are advised to consult <u>Section F</u> of this calendar for detailed course descriptions including the number of credit hours assigned to each course.

Students will normally take their courses in the following sequence:

0-30 Credit Hours

27 ch of required courses
- ECON 1013 (first term)
- ECON 1023 (second term)
- MATH 1843 (first term; see **NOTE** (1) below)
- ADM 1165 (first term)
- ADM 1513 (first term)
- ADM 1213 (second term)
- ADM 1313 (second term)
- ADM 1192 (second term)
- ADM 1195 (second term)
- Elective

31-60 Credit Hours

A. 21 credit hours of required courses and 9 ch of electives
- ADM 2223 (first term)
- ADM 2315 (first term)
- ADM 2413 (first term)
- ADM 2623 (first term)
- ADM 2624 (second term)
- ADM 2713 (second term)
- ADM 2815 (first term)
- Elective (second term; see **NOTE** (2) below)
- Elective (second term; see **NOTE** (2) below)

61-90 Credit Hours (BBA)
61-93 Credit Hours (Honours BBA)

A. 12 ch of required courses
- ADM 3123 (first term)
- ADM 3155 (first term)
- ADM 3192 (first term)
- PHIL 3204 (first term)
B. 24 ch of electives for Basic BBA (see Note 2)
27 ch of electives for Honours BBA (see Note 2)

91-120 Credit Hours (BBA)
94-126 Credit Hours (Honours BBA)

A. 3 ch of required courses
- ADM 4143 (either term)
B. 27 ch (30 ch for Honours BBA) of electives (see Note 2), including at least 3 ch of applied electives, such as:
- Thesis/Honours in area of study
- Internship in area of study
- Independent study
- ADM 4195 Management Internship (3 co-op work terms completed)
- ADM 4450 Student Investment Fund (6 ch)
- ADM 4353 Export Market Entry
C. Completion of Professional Skills

NOTES:

1. Students who plan to do more than the minimum requirements in Mathematics are advised to take MATH 1003 in their first year.

NOTE: Students cannot receive credit for both MATH 1843 and MATH 1003.

2. When choosing electives, students will need to consider the Focus or Breadth Component: Students must take 15 ch of electives from outside the Faculty of Management.
Focus – 15 ch of electives from within one of the groups below.
Breadth – 15 ch of electives from at least two of the following four groups:

- **Group A: Social Sciences** *(Political Science, Psychology, Sociology, or Anthropology)*
- **Group B: Humanities** *(Philosophy, Classics, English, or History)*
- **Group C: non-English Language** *(Meant to be introductory level; Native speakers must choose courses in an alternate language. Choose from French, German, Spanish, and many more)*
- **Group D: STEM** *(Science, Technology, Engineering, or Math)* **or Kinesiology Courses** *(KIN, RSS)*

Focus or Breadth elective courses may be introductory level.
Outside the Focus or Breadth electives, a student may take a maximum of 6 ch of introductory courses.

11. Concentration Courses

Concentrations are offered in Accounting, Entrepreneurship, Finance, Human Resource Management, International Business, Logistics and Marketing. Concentrations are completed by achieving a cumulative GPA of at least 3.0 for 12 ch of approved electives in the area of interest, with a minimum grade of C for any individual course. Students should note that at least half the credits counted towards a concentration must be from courses taken at the University of New Brunswick. Exceptions may be considered by the Dean of the Faculty of Management. Approved courses for each subject of concentration are as follows:

Accounting
Students must take ADM 3215, ADM 3216, ADM 3225, and at least one additional elective to earn a concentration in Accounting. Available electives in Accounting are: ADM 4215, ADM 4216, ADM 4218, ADM 4236, ADM 4245, ADM 4275, ECON 3204, ECON 3205.

Entrepreneurship
Students must take ADM 4175 and 9 credit hours of electives to earn a concentration in Entrepreneurship. Available electives in Entrepreneurship are: ADM 4115, ADM 4190, ADM 4336, ADM 4353, ADM 4435, ADM 4995, and TME 3313.

Finance
Students must take ADM 3415, 6 ch of approved Finance electives, and 3 ch of either approved Finance or non-Finance electives to receive a concentration. Available electives for the Finance concentration are: ADM 3435, ADM 3445, ADM 4437, ADM 4415, ADM 4416, ADM 4421, ADM 4425, ADM 4426, ADM 4435, ADM 4445, ADM 4450 (SIF), ADM 4455, ADM 3628. **NOTE**: Only one of either ADM 4495 or ADM 4496 will count towards the Finance concentration. A list of permissible non-Finance electives is available from the Faculty of Management.

Human Resources Management
Students must take four HRM electives to receive a concentration. Available electives in HRM are: ADM 3875, ADM 4815, ADM 4825, ADM 4827, ADM 4828, ADM 4835, ADM 4845, ADM 4856, ADM 4857, ADM 4878.

International Business
Students must take ADM 3155 and three electives to earn a concentration. Available electives are: ADM 4353, ADM 4355, ADM 4455, ADM 4856, ECON 3401.

Logistics
Students must take ADM 4615, ADM 4635, ADM 4656, and 3 credit hours of electives to earn a concentration. Available electives are ADM 3685, ADM 4675, ADM 4677, ADM 4686, and ADM 4634.

Marketing
Students must take ADM 2315, ADM 3345, ADM 4325, and a Marketing elective to receive a concentration. Available electives are: ADM 3316, ADM 4315, ADM 4316, ADM 4326, ADM 4335, ADM 4336, ADM 4345, ADM 4346, ADM 4353 ADM 4355, ADM 4396.

12. Major Courses

Honours BBA students must complete a major in a designated subject. A major is completed by achieving a cumulative average GPA of 3.0 for at least 24 ch of approved courses in the area of interest, with a minimum grade of C for any individual course. Students wishing to undertake a major must consult with advisers in the Faculty of Business Administration and should note that some electives may not be available in a session. Courses entailing internship or independent study require prior approval and are subject to faculty and placement availability.

Students should note that at least half the credits counted towards a BBA Honours program must be from courses taken at the University of New Brunswick. Exceptions may be considered by the Dean of the Faculty of Management.

Approved courses for each major subject are as follows:
Accounting

18 ch comprised of: ADM 3215, ADM 3216, ADM 3225, ADM 4215, ADM 4216, and ADM 4275. At least 6 ch from: ADM 3415, ADM 3435, ADM 3445, ADM 4218, ADM 4236, ADM 4245, ADM 4295, ADM 4296, ADM 4415, ADM 4416, ADM 4425, ADM 4426, ADM 4445, ADM 4455, ADM 4475, ECON 3204, ECON 3205.

Economics
21 ch comprised of: ECON 3013, ECON 3023, ECON 3665, ECON 4013, ECON 4023, ECON 4625, and ECON 4665. An additional 3 ch of other Economics electives beyond the introductory-level.

Finance
6 ch comprised of ADM 3415 and ADM 4445. 3 ch comprised of ADM 3628 or approved equivalent. At least 15 ch from the following Groups A and B, with a minimum of 9 ch from Group A.
Group A: ADM 3435, ADM 4416, ADM 4421, ADM 4425, ADM 4426, ADM 4450, ADM 4455, and ADM 4475 (or MATH 4853).
Group B: ADM 3445, ADM 3626, ADM 4218, ADM 4415, ADM 4435, ADM 4437, ADM 4495, ADM 4496, ECON 3013, ECON 3023, ECON 3205, ECON 3401, ECON 3665, and MATH 3813. **NOTE**: Group B may include another 3 ch advanced level university course, subject to the prior approval of the Faculty of Management.

Finance and Economics
6 ch comprised of ADM 3415 and ADM 4445. 3 ch comprised of ADM 3628 or approved equivalent. 9 ch from: ADM 3435, ADM 4416, ADM 4421, ADM 4425, ADM 4426, ADM 4450, ADM 4455, and ADM 4475 (or MATH 4853). 18 ch from ECON 3013, ECON 3023, ECON 3025, ECON 3665, ECON 4013, ECON 4023, and ECON 4625.

Human Resources Management
3 ch comprised of ADM 3875. At least 21 ch of additional electives from: ADM 4525, ADM 4526, ADM 4815, ADM 4825, ADM 4826, ADM 4827, ADM 4828, ADM 4835, ADM 4845, ADM 4856, ADM 4857, ADM 4878, ADM 4895, ADM 4896, ADM 4990, ECON 3724.

Marketing
9 ch comprised of: ADM 2315, ADM 3345, ADM 4325. At least 15 ch. Of electives from: ADM 3155, ADM 3316, ADM 4315, ADM 4316, ADM 4317, ADM 4324, ADM 4335, ADM 4336, ADM 4345, ADM 4346, ADM 4353, ADM 4355, ADM 4395, ADM 4396, ADM 4615, ADM 4990, RSS 4081, SOCI 3252, SOCI 3253.

13. Co-operative Education Option

The Faculty of Management offers a Co-operative Education (Co-op) option that is available to academically qualified BBA students who have completed one year of study. Co-op is "practical" education which extends the learning process beyond the classroom into the workplace by alternating academic study terms with paid periods of career related work experience. The Co-op Option in Management consists of eight study terms and three work terms of four months each. This option is normally completed in four calendar years, compared to four academic years for the regular BBA degree. The Co-op option allows students to complete concentrations or majors per degree requirements (see Sections 9B, 9C, 11, 12), in addition to Co-op. Students normally apply for entry to the Co-op option during their second term of study. Later application and entry into the co-op option may be possible.

a. Admission to the Co-op option is competitive. Students must achieve a GPA of at least 3.0 in the study term preceding their application for employment. Students are advised to contact the Faculty of Management Co-op Coordinator for additional acceptance criteria.
b. Students must register for each work term in order that they be considered full-time students while working.
c. A work term fee will be charged for each 4 month work term registered.
d. A student's progress on work terms will normally be jointly monitored by the employer and by the Co-op Coordinator. As well, the employer will complete an evaluation of the student. The student must discuss these evaluations with the Coordinator upon returning to UNBF from the work term.
e. Students must have a minimum of 3 work terms, alternating with study terms, with satisfactory employer evaluations and work term reports to meet the requirements of the Co-op option. Upon graduation with the BBA degree, Co-op students meeting these requirements will have the designation "Co-operative Education" following the degree designation on their transcript.
f. Students will normally have at least one study term after their last work term.
g. Each successful work term will be noted on the student's transcript.
h. Upon successful completion of three work terms, students will be registered in ADM 4195, Co-operative Education.

14. Minor in Business

The Minor in Business is designed for students from outside the Faculty of Management interested in a coherent package of Business Administration courses.

The Minor in Business will consist of 24 credit hours of approved Business Administration courses. Students planning to minor in Business will be required to take ADM 1192 and 21 additional credit hours chosen

in consultation, and in advance, with the Faculty of Business Administration. At least 12 of the 24 credit hours must be from the 3000 and 4000 level courses. A grade of C or better is required in each course used towards the Minor in Business.

Students should note that at least half the credits counted towards a Minor in Business must be from courses taken at the University of New Brunswick. Exceptions may be considered by the Dean of the Faculty of Management.

15. Certificate Programs

The Faculty of Management offers degree credit courses leading to Certificates in Business Administration, Public Administration, and Applied Human Resources Management. Students may take these programs on a part-time or full-time basis.

These certificate programs are designed to provide individuals, especially working adults, with an opportunity to engage in systematic and coordinated study directed towards an academic goal. Participants enrolled in the certificate programs will have an opportunity to study the basic principles of administration and management; to improve their analytical skills; to increase their awareness of the various factors contributing to effective decision-making; and to understand the basic functions of organizations.

The certificate programs will be of particular interest to those who are engaged in administration or are contemplating a career in administration or management and wish to expand their knowledge in the related subject areas. The courses in the certificate programs are presented at the undergraduate level of study and provide a framework for theoretical analysis of general principles of administration through lectures, discussions and individual study. By combining accumulated work experience and formal class-room learning, participants will be able to relate theory and practice as part of their continuing development.

All courses for the certificates are degree-credit courses. Individuals who successfully complete certificate courses and who are subsequently admitted to a degree program normally will receive credit towards a degree for those courses normally acceptable for credit in the particular degree program. Individuals admitted to a BBA degree program will normally be able to apply all certificate courses completed to their degree program.

General Regulations

The following regulations apply to the certificate programs in business administration:

1. Certificate in Business Administration Level I
   Certificate in Business Administration Level II
   Certificate in Public Administration Level I
   Certificate in Public Administration Level II
   Certificate in Applied Human Resources Management
2. A maximum of 12 credit hours or the equivalent normally may be transferred from another degree, certificate or similar program taken elsewhere.
3. Each student seeking admission to a certificate program must receive the prior approval of the Faculty of Business Administration. The certificate programs are not necessarily designed for completion in one year. There may be variations with course offerings and *Prerequisites*.
4. A certificate may be awarded to a student enrolled in a UNB degree program other than the BBA degree. Students who have withdrawn from the BBA degree program may apply for the appropriate certificate.
5. To earn a certificate, a student must have successfully completed the number of credit hours in approved courses specified for the certificate, and achieved a cumulative grade point average of at least 2.0.
6. There is no minimum age and there are no specific *Prerequisites* for entrance into a Level I Certificate Program in Business Administration or in Public Administration. Successful completion of a Level I Certificate is the prerequisite for entrance into a Level II Certificate Program. Although there are no specific entrance requirements for this program, students are expected to undertake university-level study and assignments demanded in degree-credit courses. Some courses, such as Finance, Computer Science and Business Statistics, may require knowledge of high school mathematics.
7. The Certificate Program in Applied Human Resources Management requires approval for entrance from the Faculty of Management and applicants must meet specific admission criteria (see below).
8. The normal *Prerequisites* for ADM 2623 will be waived for candidates in the certificate programs.

Certificate in Business Administration Level I

Admission

This program is open to all interested individuals but admission requires prior approval from the Faculty of Management.

Requirements

A Certificate in Business Administration Level I will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 36 credit hours required, and
b. successfully complete (with a C or better):

		Ch
ADM 1192	Business Planning and Entrepreneurship	3
ADM 1213	Financial Accounting	3
ADM 1313	Principles of Marketing	3
ADM 2413	Principles of Finance	3
ADM 1513	Organizational Behaviour	3
ADM 2623	Business Statistics	3
PHIL 3204	Business Ethics	3
ECON 1013	Principles of Microeconomics	3
ECON 1023	Principles of Macroeconomics	3
plus	Six credit hours in total chosen from Anthropology, Political Science, Psychology, or Sociology	6
	Three credit hours of electives from any faculty	3
Total Credit Hours		**36**

Certificate in Business Administration Level II

Admission:

This program is open to all interested individuals but requires successful completion of the Certificate in Business Administration Level I. Approval for admission must also be received from the Faculty of Management.

Requirements:

A Certificate in Business Administration Level II will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 66 credit hours required, and
b. successfully complete (with a C or better):

		Ch
ADM 1192	Business Planning and Entrepreneurship	3
ADM 1213	Financial Accounting	3
ADM 2223	Managerial Accounting	3
ADM 1313	Principles of Marketing	3
ADM 2413	Principles of Finance	3
ADM 1513	Organizational Behaviour	3
ADM 2623	Business Statistics	3
ADM 3123	Business Law I	3
ADM 2815	Human Resources Management	3
PHIL 3204	Business Ethics	3
ECON 1013	Principles of Microeconomics	3
ECON 1023	Principles of Macroeconomics	3
plus	Six credit hours in the Humanities or Languages	6
	Six credit hours in total chosen from Anthropology, Political Science, Psychology, or Sociology	6
	Eighteen credit hours of electives from any faculty including Business Administration	18
Total Credit Hours		**66**

Certificate in Public Administration Level I

Admission:

This program is open to all interested individuals but admission requires prior approval from the Faculty of Management.

Requirements:

A Certificate in Public Administration Level I will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 36 credit hours required, and
b. successfully complete (with a C or better):

		Ch
ADM 1192	Business Planning and Entrepreneurship	3
ADM 1513	Organizational Behaviour	3
ADM 3123	Business Law I	3
ECON 1013	Principles of Microeconomics	3
ECON 1023	Principles of Macroeconomics	3
POLS 2202	Canadian Politics	3
plus	Nine credit hours in total chosen from Anthropology, Political Science, Psychology, or Sociology	9
	Six credit hours of electives from any faculty	6
Total Credit Hours		**36**

Certificate in Public Administration Level II

Admission:

This program is open to all interested individuals but requires successful completion of the Certificate in Public Administration Level I. Approval for admission must also be received from the Faculty of Management.
A Certificate in Public Administration Level II will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 66 credit hours required, and
b. successfully complete (with a C or better):

		Ch
ADM 1192	Business Planning and Entrepreneurship	3
ADM 2223	Managerial Accounting	3
ADM 1313	Principles of Marketing	3
ADM 1513	Organizational Behaviour	3
ADM 2623	Business Statistics	3
ADM 3123	Business Law I	3
PHIL 3204	Business Ethics	3
PHIL 2202	Canadian Politics	3
ECON 1013	Principles of Microeconomics	3
ECON 1023	Principles of Macroeconomics	3
plus	Three credit hours in Business Administration elective	3
	Six credit hours chosen from Economics	6
	Six credit hours chosen from Political Science	6
	Nine credit hours chosen from Anthropology, Political Science, Psychology or Sociology	6
	Nine credit hours of electives from any Faculty (The courses offered by the Departments of Economics and Political Science are most appropriate to the study of public administration).	9
Total Credit Hours		**66**

Certificate in Applied Human Resource Management

Admission:

Admission requires prior approval from the Faculty of Management and satisfaction of the following criteria.

1. 30 credit hours completed at a recognized post-secondary institution with a minimum cumulative grade point average of 2.7

    Or

2. A minimum of two years relevant work experience, in the human resource field, to be approved on an individual basis by the Dean in consultation with the Human Resources Management faculty.

Requirements:

A Certificate in Applied Human Resources Management will be awarded to individuals who:

a. achieve a cumulative grade point average of at least 2.0 over the 30 credit hours required, and
b. successfully complete (with a C or better):

		Ch
ADM 1192	Business Planning and Entrepreneurship	3
ADM 1513	Organizational Behaviour	3
ADM 2815	Human Resources Management	3
ADM 3875	Labour Relations	3
ADM 4815	Training and Development	3
ADM 4825	Compensation Management	3
ADM 4857	Human Resources Selection Systems	3
Plus	Nine credit hours of electives from ADM 4526, ADM 4826, ADM 4827, ADM 4828, ADM 4835, ADM 4845, ADM 4856, ADM 4878, ADM 4895, ECON 3724	3
Total Credit Hours		**30**

BACHELOR OF COMPUTER SCIENCE

FACULTY OF COMPUTER SCIENCE

General Information:	Computer Science Information Technology Centre, Room ITC314
Mailing Address:	Faculty of Computer Science, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4566
Fax:	(506) 453-3566
Email:	fcs@unb.ca
Website:	http://www.unb.ca/fredericton/cs/

FACULTY

Dean: Luigi Benedicenti, Beng, MACS, PhD, Peng, SMIEE, FEC
Assistant Dean (Teaching & Undergraduate Affairs): Paul Cook, Bsc, MScCS, PhD
Assistant Dean (Research, Graduate Studies, Industry Outreach): Patricia Evans, BScCS. MScCS, PhD

- Aubanel, Eric, BSc (Trent), PhD (Qu.), Prof - 2002
- Bateman, Scott, BSc (UPEI), MSc, PhD (Sask), Assoc Prof – 2015
- Benedicenti, Luigi, Laurea (Universita di Genova), PhD (Universita di Genova), Prof and Dean – 2017
- Bidlake, Leah, BCS, BEd, MCS (UNB), Senior Instructor – 2016
- Bremner, David, BSc (Calg), MSc (S.Fraser), PhD (McG.), Prof (Cross Appt - Mathematics and Statistics) - 1999
- Cook, C. Paul, BSc (UBC), MScCS, PhD (Tor), Assoc Prof and Assistant Dean (Teaching and Undergraduate Affairs) – 2014
- Evans, Patricia, BScCS (Alta), MScCS, PhD (Uvic), Prof and Assistant Dean (Research, Graduate Studies, Industry Outreach) - 1997
- Fleming, Michael, BSc (Mt.All.), Mmath, PhD (Wat.), Prof - 2003
- Ghorbani, Ali Akbar, BSc (Tehran), MScCS (GWU), PhD (UNB), Prof - 1999, Canada Research Chair Cybersecurity - 2016
- Habibi Lashkari, Arash, BS (IAU), MSC (UM), PhD (UTM), Asst Prof - 2017
- Kent, Kenneth, BSc (MUN), MSc, PhD (Uvic), Prof - 2002
- Lu, Rongxing, BSc, MSc (Tongi), PhD (Shanghai), PhD (Wat.), Assoc Prof - 2016
- MacIsaac, Dawn, BPE (McM.), BEd (Qu.), Beng (McM.), MscE (UNB), PhD (UNB), Assoc Prof (Joint ECE) - 2002
- Mandal, Kalikinkar (Kali) - BSc, MSc, Mtech CS (India), PhD (Waterloo), Asst Prof - 2020
- McAllister, Andrew, BA, MSc (CS) (UNB), PhD (Sask), Prof - 1994
- Pochec, Przemyslaw, Beng (Warsaw), MSc(CS), PhD (UNB), Assoc Prof - 1989
- Ray, Suprio, BE (NIT), MSc (UBC), PhD (Tor), Asst Prof - 2015
- Rea, Daniel, BCS, MCS, PhD (Manitoba), Asst Prof - 2020
- Song, Wei, BSc (HBU), MSc (BUPT), PhD (Wat), Assoc Prof - 2009
- Webber, Natalie, BCS, MCS (UNB), Sr. Teaching Associate - 2000
- Wightman, Richard, BScF, MScF (UNB), Sr. Teaching Associate - 2000
- Zhang, Huajie, BSc (China), MSc (China), PhD (Wont), Prof - 2002

Adjunct Professors*

- Alhadidi, Dima, MSc (Jordan), PhD (Concordia), Adjunct Prof - 2019
- Bagheri, Ebrahim, BSc, MSc, PhD, Adjunct Prof - 2016
- Buffett, Scott, BCS, MCS, PhD (UNB), Adjunct Prof - 2005
- Herpers, Rainer, PhD, Adjunct Prof - 2018
- Hinkenjann, Andre, PhD, Adjunct Prof - 2010
- Mamun, Mohammad, Adjuct Prof - 2020
- Munro, Ian, BA (UNB), MSc (Br Col), PhD (Tor), Adjunct Prof - 2005
- Patros, Panos, PhD, Adjunct Prof - 2019
- Ploeger, Paul, PhD, Adjunct Prof - 2018
- Spencer, Bruce, BSc (Dal), Mmath, PhD (Wat), Adjunct Prof. - 1990
- Stakhanova, Natalia, PhD, Adjunct Prof - 2019

* Adjunct professors are involved in the graduate programs and research of the Faculty and are not usually involved in the undergraduate curriculum.

General Information

The Faculty of Computer Science was established at UNB on May 1, 1990, thereby becoming the first such faculty in Canada. Computer Science at UNB was established as a Department in 1968 and offered only the graduate MCS degree. Subsequently, in 1973, Computer Science became a School, administratively affiliated with the Faculty of Engineering, and offered the undergraduate BCS degree, conferring its first such degree in 1974. The Ph.D. program was approved in 1987, with its first degree awarded in 1990.

The Faculty offers a four-year undergraduate program leading to the degree of Bachelor of Computer Science. An Honours degree program is also offered. The program of studies is designed to enlarge the student's view of the world as well as to provide the background and qualifications to pursue careers in the field of computing. It is based on a set of core subjects which are intended to develop problem solving ability and provide a basic understanding of concepts fundamental to information processing. Students, through a choice of electives, may deepen their knowledge in computing subjects or develop an understanding in some complementary discipline.

The Faculty of Computer Science also offers the following degree programs:

- Bachelor of Science in Software Engineering (offered jointly with the Faculty of Engineering)

Co-Operative Education Program

1. The Faculty operates a full Co-operative Education (Co-op) Program that is available to academically qualified Computer Science students who have completed one year of study. Co-op is "hands-on" education, extending the learning process beyond the classroom into the workplace by alternating academic study terms with paid periods of career related work experience. This allows students to put classroom knowledge to practical and profitable use in the Canadian workplace. At UNB the Co-op Program in Computer Science consists of eight study terms and four to six work terms of four months each. This program is normally completed in five years, compared to the regular four year program, and allows students to obtain a Honours designation in addition to Co-op. Students normally apply for this program during their second term of study and enter the program at the end of their first year, although later application and entry into the program is possible.
2. Co-op is a designated option within the BCS, BA/BCS, BCS/BSc, and BscSwE programs in the Faculty of Computer Science.
3. To be eligible for a co-op work term, students must normally have achieved a minimum of a 2.7 GPA in the study term preceding their application for employment.
4. Students must register for each work term in order that they be considered as full-time students while working.
5. A work term fee will be charged for each 4 month work term registered.
6. The overall assessment of the work period is the responsibility of the Faculty of Computer Science. The work period assessment shall consist of two components: 1) student performance as evaluated by a coordinator, given input from the employer, and 2) a work report graded by a coordinator or a member of faculty.
7. Students must have a minimum of four work terms of four months each, alternating with study terms, with satisfactory employer evaluations and work term reports in order that the Co-op designation appear on their transcripts. Two back-to-back work terms are possible, giving periods of work up to eight months in duration.
8. A co-op student's first work term will normally be 4 months in duration. After the first 4-month work term, the student shall return to UNB to study for at least one term before going out for another work term.
9. A co-op student will normally complete at least one Summer study term during their degree program. This Summer study term will normally be completed before the student applies for their third work term. (I.e. Normally, no more than two 4-month work terms should be completed before the Summer study term.)
10. Students will normally have at least one study term after their last work term.
11. Each successful work term will be noted on the student's transcript.
12. Upon graduation, Co-op students will have the designation "Co-operative Education" following the degree designation on their transcript.
13. Students must be registered as full-time students in order to be eligible to apply for Co-op jobs.

Professional Experience Program (PEP)

This program adds flexibility to the work experiences available to our students by providing opportunities to work for employers who prefer the PEP model over the Co-op model. Moreover, many transfer students into Computer Science find it easier to fit a PEP with their academic program than a traditional sequence of Co-op work terms.

- Program Description
    1. The PEP requires an extended period of continuous work experience, the duration of which may be 12 or 16 months.
    2. A Co-op coordinator provides the necessary liaison and support activities for students in this program.
    3. The overall assessment of the PEP experience is the responsibility of the Faculty of Computer Science. The work period assessment shall consist of two components: 1) student performance as evaluated by a coordinator, given input from the employer, and 2) a work report graded by a coordinator or a member of faculty.
- Program Registration

1. The PEP is a designated option within the BCS, BA/BCS, BCS/BSc, and BscSwE, degree programs in the Faculty of Computer Science.
2. The PEP will be open to all Faculty of Computer Science students with good academic standing, who will have completed between 80 and 120 credit hours at the beginning of the PEP work term, including having completed 50% of the required Computer Science courses, and having completed at most 2 Co-op work terms. To be considered in good academic standing for the purpose of PEP registration, a student must normally have achieved a minimum of a 2.7 GPA in the study term preceding their application for employment.
3. Students may transfer from CS Co-op to PEP under the restrictions of not having completed more than 2 Co-op work terms. Students who have registered for a PEP normally will not be eligible to enter, or re-enter, the CS Co-op program.
4. Registration in this option is contingent upon receiving an offer of employment from an approved PEP employer and will depend on the number of PEP positions available. Each student normally will be allowed only one such PEP registration during their degree program.
5. Official University registration is required for each student in the PEP. This will enable PEP students to remain on the Registrar's list in good standing during the time encompassed by their off-campus PEP period.
6. Each student in this program will be charged a PEP fee.
7. A suitable notation will be placed on each student's transcript in recognition of this PEP option.

University Regulations

Students are strongly advised to read the General University Regulations, Section B of this Calendar, and in particular the subsection headed "Grading System and Classification". Any point not covered in the following regulations will be governed by the General University Regulations.

Students applying for a second undergraduate bachelor's degree, transferring from other institutions, or changing degree programs are particularly advised to consult Section B of this Calendar. Questions concerning the application of regulations should be directed to the Registrar in writing.

General Regulations

1. To earn a BCS degree, a student must complete at least 40 courses, as specified below. Completing these requirements involves, completing at least 133 credit hours' worth of courses.
2. Any course taken to satisfy any of the requirements for a BCS degree must be passed with a minimum grade of C.
3. If a BCS student receives a failing grade three times in any given course, that student will be required to withdraw from the BCS program. Failing grades include D, F, WF, and NCR. Courses with the W, #, or X notations do not count toward this total.
4. Developments in the BCS program may lead to changes in the requirements for the degree. The University reserves the right to require candidates already enrolled to meet the revised requirements where practicable.

Curriculum

The basic curriculum for the BCS program and a specialization in cybersecurity are given below to assist the student in planning a program of studies.

Students will typically take 5 or 6 courses per term to complete the program in 8 study terms. Students whose grade point average drops below 2.7 (B-) should restrict their course load to 5 courses, or fewer.
Every student must complete at least 12 credit hours of courses with an extensive English writing component with a minimum grade of "C". These courses are indicated with a "W" in the Calendar. AESL 1011 and AESL 1012 will not count for credit towards the BCS degree, nor will they count towards the writing component requirement.

Core Curriculum (Required)
Computer Science Core Requirement

(Please note: As of the 2016-2017 academic year the following set of core courses is in effect for students admitted to the BCS program.)
CS 1073 Introduction to Computer Programming I (in Java)
CS 1083 Introduction to Computer Programming II (in Java)
CS 1103 Introduction to Databases
CS 1303 Discrete Structures
CS 2043 Software Engineering I
CS 2253 Machine Level Programming
CS 2263 Systems Software Development
CS 2333 Computability and Formal Languages
CS 2383 Data Structures and Algorithms
CS 3383 Algorithm Design and Analysis
CS 3413 Operating Systems I
CS 3853 Computer Architecture and Organization
CS 3873 Net-centric Computing
CS 3997 Professional Practice

Technical Elective Requirement

In addition to the course courses listed above, students are required to select a total of 7 approved technical elective totalling a minimum of 21 ch (worth a minimum of 3 ch each, except that CS 4983 is permitted), as follows:

*   7 CS/SWE courses, at least 3 of which must have a significant computer programming component (indicated with a [P] in the Calendar).

At least 4 of these 7 technical elective courses must be 3rd year or above, and at least 1 of these must be 4th year or above. CS 4983 does not satisfy the requirement for the 4th year course. **NOTE**: Courses worth 6 credit hours or more will count as two courses toward this requirement.

Mathematics and Statistics Core Requirement

1. MATH 1003 Introduction to Calculus I
2. MATH 1013 Introduction to Calculus II
3. One of:

    MATH 1503 Introduction to Linear Algebra
    MATH 2213 Linear Algebra I
    One of the following two options:

4. STAT 3083 Probability and Mathematical Statistics I

    STAT 3093 Probability and Mathematical Statistics II
    OR:
    STAT 2593 Probability and Statistics for Engineers

5. One of:

    CS 3113   Introduction to Numerical Methods
    MATH 2003 Intermediate Mathematics I
    MATH 2513 Multivariable Calculus for Engineers
    MATH 3033 Group Theory
    MATH 3063 Geometry
    MATH 3093 Elementary Number Theory
    MATH 3213 Linear Algebra II
    MATH 3333 Combinatorial Theory
    MATH 3343 Networks and Graphs
    MATH 3353 Computational Algebra
    MATH 3363 Finite Math
    MATH 3373 Introduction to Game Theory
    MATH 3383 Introduction to Mathematical Logic
    MATH 3413 Introduction to Numerical Methods
    MATH 3803 Introduction to Mathematics of Finance
    MATH 4503 Numerical Methods for Differential Equations
    STAT 3303 Survival Analysis
    STAT 3373 Elementary Experimental Design
    STAT 4083 Multivariate Methods for Statistical Learning

Another approved MATH/STATS elective at the 2000 level or above, approved by the Assistant Dean (Undergraduate) in the Faculty of Computer Science.

Breadth Core Requirement

BCS students must complete at least 10 approved courses (minimum of 30 ch) in subjects other than computer science and mathematics, which means that CS, SWE, MATH, and STAT courses are not eligible for this requirement. Selected ECE courses may be taken toward this requirement with prior approval from the Assistant Dean (Undergraduate). One or more of ENGL 1103 and ENGL 1145 are strongly encouraged. At least 2 of these courses (minimum of 6 ch) must be at the 2000 level or above.

NOTES:

*   Courses worth 6 credit hours or more will count as two courses toward this requirement.
*   AESL 2011 and AESL 2012 (or equivalent) count as first-year English.
*   See the GENERAL **NOTES** section below for a list of courses that are not for BCS credit.

Free Electives

In addition to the courses taken to satisfy the core curriculum requirements, BCS students must complete at least 4 approved free electives (minimum of 12 ch). Students can choose combinations of electives to allow them to complete an area of specialization in cybersecurity with the BCS degree (see below), to complete a Minor in another area, or simply to acquire more breadth in their studies. **NOTE**: Courses worth 6 credit hours or more will count as two courses toward this requirement.

General NOTES

1. Credit is not given toward the BCS degree for CS 2704, MATH 1823, MATH 1833, MATH 1843, MATH 2633, ADM 2623, PHIL 3101.
2. UNIV 0101 (formerly UNIV 1001), AESL 1011 and AESL 1012 will not be counted for credit toward degree programs offered by the Faculty of Computer Science.
3. Credit will not be given for both CS 1303 and MATH 2203.
4. None of ECE 2213, ECE 2214, ECE 2215, or ECE 3221 will normally be counted for credit toward the BCS degree.

Common First Year (5 courses each term)
CS 1073 Intro to Computer Programming I (in Java)
CS 1083 Introduction to Computer Programming II (in Java)
CS 1103 Introduction to Databases
CS 1203 Overview of Computer Science
CS 1303 Discrete Structures
MATH 1003 Intro to Calculus I, or MATH 1053 Enriched Intro to Calculus I
MATH 1013 Intro to Calculus II, or MATH 1063 Enriched Intro to Calculus II
Three term courses toward the Breadth Core Requirement, selected from Arts, Business Administration, Engineering and Science.

Honours in Computer Science
The requirements for the Bachelor of Computer Science with Honours are the following:

1. At least 5 of the student's 7 BCS Technical Elective courses must be 3rd year or above, and at least 2 of these 7 courses must be 4th year or above.
2. The student must have a cumulative grade point average of 3.0 or above.
3. As one of the two required 4th year Technical Elective courses, the student must complete CS 4997 (Honours Thesis) with a grade of B or better.

Students satisfying the requirements for an Honours degree will receive a "First Class Honours" designation if their CGPA is 3.5 or above, and "Honours", if their CGPA is 3.0 or above and less than 3.5.
Students may elect to combine Honours with the specialization in cybersecurity mentioned below, but an Honours designation can be obtained without completing this specialization.

Specialization in Cybersecuirty
Emphasizes the protection of information assets from the cybersecurity threats. The requirements for the Specialization in Cybersecuirty are to complete the following courses, each with grade of C or better.

- CS 2413, CS 4335, CS 4411, CS 4417, CS 4419, CS 4865.

First and second year courses should be carefully chosen to include courses which are prerequisites to courses intended to be taken in the third and fourth year.

Minor in Computer Science
Students who are not registered in a degree program in the Faculty of Computer Science may complete a Minor in Computer Science by completing 8 approved term courses from CS or SWE, including the following six required courses:
CS 1073,
CS 1083,
CS 1303 (or MATH 2203),
CS 2043,
CS 2263 and
CS 2383.
For students graduating with a Bachelor of Science in Engineering in Electrical Engineering, the set of six required courses may alternatively be:
CS 1003,
CS 1023,
CS 1303 (or MATH 2203),
CS 2383,
CS 3413 (or ECE 4251), and
ECE 4403.
In addition to the six required courses, all students pursuing a Minor in Computer Science must complete two additional CS or SWE courses, one of which must be at the second year level or above, with the second of those being at the third year level or above.
Courses of 1 or 2 credit hours cannot be counted for credit towards the Minor. CS courses that are designated for non-CS students will not count towards the Minor. A grade of C or better is required in all courses offered for the Minor. Students working towards a Minor in Computer Science are encouraged to make their intentions known to the Faculty of Computer Science.

Concurrent BA/BCS Degree Program
The Faculty of Computer Science, in cooperation with the Faculty of Arts, offers students the opportunity to obtain both a BCS degree and a BA degree by selecting a well-planned choice of courses. To complete the concurrent degree, students must satisfy both the BA and BCS degree requirements. Completing these requirements will involve completing at least 151 credit hours worth of courses over a five year period. In order to meet the requirements for this program, it is necessary for the student to obtain advice from both faculties. By completing this program, the student will meet the requirements for the BCS degree; participation in the Computer Science Co-op program will lengthen the student's program. For specific details on course planning, see the Faculty of Arts sections of the Calendar.

Admission requirements:
Students must satisfy the admission requirements for both the Bachelor of Computer Science and the Bachelor of Arts as given in section B.

Concurrent BCS/BSc Degree Program

Most scientific careers now require a thorough background in computing. Many careers in the computing field require primary knowledge in a scientific application area. The Faculty of Science and the Faculty of Computer Science offer students a program in which to pursue a science major and a complete computer science education. Students may enrol in a concurrent degree program in which at the end of five to five-and-a-half years of study a student will graduate with both a BSc with a major in Biology, Chemistry, Earth Sciences, Mathematics, or Physics, and a BCS. Participation in the Computer Science Co-op program will lengthen the student's program. The program is designed so that if a student decides to opt for BCS alone, the adjustments can be easily made. Students in the concurrent degree program are able to count many of their courses toward the requirements of both degrees so it is important to select courses carefully from the outset, in consultation with an advisor. For specific details on course planning, see the Faculty of Science sections of the Calendar.

Admission requirements:
Students must satisfy the admission requirements for both the Bachelor of Computer Science and the Bachelor of Science as given in Section B.

Certificate in Software Development

General
This certificate program is designed to provide individuals, especially working adults, with an opportunity to acquire the formal background necessary to become effective participants in the Information Technology industry. This program is directed towards people who are not currently enrolled in an undergraduate degree program at UNB. It is expected that applicants will have good command of high school mathematics. If not, they will have to take MATH 0863 (pre-calculus math) before applying to the program. Credits earned in the certificate program may subsequently be recognized for credit in an undergraduate degree program.
The program consists of 6 core courses and 4 elective courses.

Core Courses
CS 1073 Introduction to Computer Programming I (in Java)
CS 1083 Introduction to Computer Programming II (in Java)
CS 1303 Discrete Structures
CS 2043 Software Engineering I
CS 2263 Systems Software Development
CS 2383 Data Structures and Algorithms
Elective Courses: 4 courses (at least 3 credit hours each) chosen from:

- CS 1103 Introduction to Databases
- CS/SWE courses at the 2000 level or above that can be taken for credit by Bachelor of Computer Science students.

Any course taken to satisfy any of the requirements for a Certificate in Software Development must be passed with a minimum grade of C. If a student in the certificate program receives a failing grade three times in any given course, that student will be required to withdraw from the certificate program. Failing grades include D, F, WF, and NCR. Courses with the W, #, or X notations do not count toward this total.
This program is intended as a part-time program. The program can be completed in 16 months with effort. Sample schedules can be found below.

Fastest Possible Completion Schedule (16 months):
Fall: CS 1073, CS 1303.
Winter: CS 1083, one elective
Summer: CS 2263, two electives
Fall: CS 2043, CS 2383, one elective
Two courses per term (20 months):
Fall: CS 1073, CS 1303.
Winter: CS 1083, one elective
Summer: CS 2263, two electives
Fall: CS 2043, CS 2383
Winter: Two electives

Work Term Component
An optional four month work term for students in the Undergraduate Certificate in Software Development is available as specified by the following regulations:

1. The work term will be administered by the CS Co-op Program. A work term evaluation and work term report will be part of the experience.
2. Certificate students are eligible for at most one work term, available only between September and April.
3. Certificate students must have achieved a minimum of a 2.7 GPA on all courses taken relevant to the Certificate Program.
4. Students must have completed at least 8 ch in the Certificate Program before being eligible to apply for a work term.
5. Students must normally have a minimum of one study term remaining following their work term.
6. There will be a work term fee associated with the work term experience. This fee will be the same as the work term fee for a Co-op work term.

Computer Science (BCS) Entrance Program

1. High School students who do not meet the admission requirements noted in the Admission Chart for direct entry to the BCS program but have a passing grade in each of the required courses and a minimum admission average of 60% may be considered for full time admission to an Entrance Program to the extent that capacity allows.
2. Students enrolled in the BCS Entrance program are restricted to a maximum of 28 ch in the first year of studies. This is a prescribed set of courses as determined by the Faculty, including Math 1003, five courses in Computer Science, one breadth course (e.g., Arts, Business Administration) and UNIV 0101.
3. Students are required to meet with their Faculty Advisor on a semi-annual basis.
4. Students who successfully complete their first year with a minimum grade of C in at least 20 ch of courses, obtain a minimum GPA of 2.0 regardless of the total number of credit hours completed, successfully complete UNIV 0101 and other conditions as may be outlined by the Faculty, will be approved for admission to the BCS program for the upcoming academic year.
5. Students who do not succeed in completing the program requirements may not be permitted to continue in the BCS Entrance program nor enter the BCS degree program.
6. Students can only register in the BCS Entrance program once.

BACHELOR OF EDUCATION

FACULTY OF EDUCATION

General Information:	Marshall d'Avary Hall, Room 327
Mailing Address:	Faculty of Education, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-3508
Fax:	(506) 453-3569
Email:	educ@unb.ca
Website:	http://www.unb.ca/fredericton/education/

FACULTY

Dean: Sharon Wahl, BA (SFU), Prof. Teacher's Cert. (UBC), Med (SFU), PhD (SFU)

- Belczewski, Andrea, BSc (UNB), PhD (Queen's) Senior Teaching Associate, Asst Director (MWC) - 2002
- Benjamin, Amanda, BA (York), MA (Concordia), PhD (UNB), Assoc Prof - 2009
- Blatherwick, Mary, BA (Ed), BFA (NSCAD), MA (UBC), PhD (Roehampton), Prof - 2000
- Brien, Ken, BA (UWO), BEd (UWO), MEd (UNB), EdD (Alberta), Prof - 2005
- Burkholder, Casey, BA (Manitoba), BEd (Acadia), MA (Concordia), Asst Prof - 2017
- Culligan, Karla, BA (MtA), BEd, MEd, PhD (UNB), Asst Prof - 2021
- Dicks, Joseph, BA, BEd (Nfld), MEd, PhD (Ott), Prof - 1998
- Hamm, Lyle, A. (Brandon U), BEd (Alberta), MEd (Lethbridge), PhD (Calgary), Assoc Prof - 2013
- Hirschkorn, Mark, BSc (U. Sask), BEd (Lethbridge), MEd, PhD (Alberta), Assoc Prof - 2008
- Kristmanson, Paula Lee, BEd (UNB), CFSL (Laval), MEd, PhD (UNB), Assoc Prof
- Landine, Jeff, BA (UNB), BEd (STU), MEd (UNB), PhD (OISE/U of T), Assoc Prof - 2010
- Malins, Pamela, BA (Laurier-Brantford), BEd (Nipissing), MEd (Western), PhD (Western), Asst Prof - 2019
- Massfeller, Helen, BSc (Liverpool John Moores U), MA, PhD (Alberta), Assoc Prof - 2015
- McLoughlin, John, Bmath (Wat), MSc Teaching (Tor), PhD (SUNY Buffalo), Prof (Cross Appt. - Math & Stats)- 2002
- Morrison, William, BEd, MEd, (UNB), PhD (Alberta),Prof - 2002
- Peterson, Patricia, BEd (UNB), MEd (U. of N.Tex.), PhD (Boston U), Assoc Prof - 2008
- Plaice, Evelyn, BA (Oxf.), MA (Nfld), PhD (Manc), Assoc Prof (Joint Anthropology) - 1999
- Randall, Lynn, BPE (Brock), BEd, MEd (UNB), PhD (Ohio State), Assoc Prof - 2000
- Rogers, Matthew, BA, BEd, MEd, PhD (UNB), Assoc Prof - 2016
- Rose, Ellen, BA, BEd (Victoria), MEd, PhD (UNB), Assoc Dean (Graduate Studies) - 2001
- Rose, Sherry, BEd, MEd, PhD (UNB), Assoc Prof - 2013
- Saul, Roger, BA (McGill), BEd, MEd, PhD (York) - Assoc Prof - 2014
- Sloat, Elizabeth, BEd (UNB), MEd, PhD (McGill), Prof - 1999
- Stewart, Kim, BEd, MEd, PhD (UNB) - Asst Prof - 2020
- Wagner, David, BRS (Mennonite Brethren), BA (Winnipeg), BEd, MEd, PhD (Alta), Prof - 2004
- Wahl, Sharon, BA (SFU), Prof. Teachers Cert. (UBC), MEd (SFU), PhD (SFU) Dean - 2018
- White, Melissa, BOA (Mt. St. Vin), MA, PhD (OISE), Assoc Prof - 2011
- Winslow, Katherine M., BSc (St. F.X.), MS (N Dakota State), PhD (Minn.), Assoc Prof & Assoc Dean (Undergraduate Studies) - 1987

Statement of Purpose

The Faculty of Education prepares students to assume leadership roles in education. Graduates are ready to begin a professional career and to broaden and deepen their professional expertise through continuing study. Through a sequence of educational experiences integrating theory and practice, the faculty and its partners in education provide opportunities for the academic and professional development of teachers, guidance personnel, and administrators at all levels in public school systems, community colleges, and other learning environments. Students acquire the knowledge, ethical standards, skills, dispositions, and flexibility needed to address current problems in education both creatively and effectively, and to think critically about professional practice. In all its work, the Faculty seeks to prepare educators who understand the past, delight in the challenges of the present, and look optimistically to the future.

Students have access to centres in the Faculty which provide teaching, research, and educational services to schools and communities. These include centres established for the study of Indigenous education, early childhood education, and second language learning.

Degrees in Education

The BEd degree is awarded upon successful completion of 60 credit hours of study in Education, following another Bachelor's degree. There are four program streams that may be followed:

1. School Years Program (information follows)
2. Bachelor of Education in Adult Education
3. Wabanaki Bachelor of Education (4-year Elementary)
4. Bachelor of Education in Early Childhood Education (2-year)

Please NOTE: In order to qualify for a level 5 New Brunswick teaching license, a minimum combined total of 168 credit hours is required between the two degrees. Students entering the school years pattern will be accepted into one of the following:

- Program Option 1: Early Years/Elementary
- Program Option 2: Secondary

Students must apply in writing to the Associate Dean for Undergraduate Studies to change programs.

General Information

All students wishing to follow degree credit programs in Education must obtain permission to enrol from the Admissions Office of the University. Students pursuing the School Years Program will only be able to commence study in the Faculty in late August. Please refer to Section B of this calendar for more information on Admission requirements.

Those wishing to follow a graduate studies program should write to the Dean of the School of Graduate Studies.

Students who have completed some education course work within their previous Bachelor's program, may apply for substitution credit toward the Education program. Courses taken before admission will not necessarily be accepted for degree substitution.

Graduates of the BEd program are pursuing careers in education in many jurisdictions in Canada, the United States, and in other parts of the world. Students who successfully complete the school years requirements, are eligible to apply for a New Brunswick teacher's certificate. This certificate is recognized by other Canadian Provinces and most US states. Nevertheless, students should ensure that the specific programs they are following will qualify them for teacher certification in the province, state or country where they hope to work.

NOTE: The Province of New Brunswick Teacher Certification Regulations under the Education Act states that only Canadian citizens or those holding landed immigrant status or a work visa are eligible for teacher certification in the Province of New Brunswick.

Prerequisites to the Program

To be admitted to courses in French second language education, students must possess a high level of French competency. Students must provide evidence of this competency through a French oral proficiency certificate with a minimum level of "Advanced" from the New Brunswick Department of Post-Secondary Education, Training and Labour.

The New Brunswick Department of Education requires that all BEd students entering schools (for practicum or individual course requirements), must provide evidence of a Criminal Record Check (including the vulnerable sector). Students are responsible, at their own expense, to provide evidence of the Criminal Record Check (including vulnerable sector) to the Faculty of Education upon acceptance into the program. Documentation outlining the need for the background check, required by law enforcement agencies in many jurisdictions, will accompany the offer of admission from the Admissions Office.

Elementary Program

Applicant must have completed an undergraduate degree (normally 120 credit hours) with a minimum cumulative grade point average of 2.7.

NOTE: Admission to the Bachelor of Education is highly competitive. The minimum CGPA stated may not be sufficient to secure a place. Students must have completed at least 30 credit hours (10 term courses) in teachable subjects. This must include a minimum of three credit hours of course work from each of the first two categories listed below and the remaining 24 credit hours from at least four different categories (including English and mathematics).

1. English
2. Mathematics
3. Sciences
4. Humanities
5. Languages
6. The Arts
7. Health and Physical Education
8. Social Sciences

Teachable subjects (as defined by the New Brunswick Department of Education) are: Biology, Business Administration, Canadian Studies, Chemistry, Classics, Commerce, Computer Science, Drama, Economics, English, Environmental Science, Family Studies, French, Geography, Graphic Arts and Design, Health, History, Home Economics, Information Technology, Languages, Mathematics, Music, Physical Education, Physics, Political Science, Technology Education, Theatre Arts, Visual Arts.

NOTE: Students entering this stream will be placed in an elementary school. Applicants should note that not all teachable subjects fall into the prerequisite categories.

In addition to the above, applicants must complete an application package that includes:

1. Three written statements related to interest in, and goals for, pursuing the Education program.
2. List of activities relevant to teaching
3. Three references

Secondary Program

Applicant must have completed an undergraduate degree with a minimum cumulative grade point average of 2.7. **NOTE:** Admission to the Bachelor of Education is highly competitive. The minimum CGPA (cumulative grade point average) stated may not be sufficient to secure a place. Students must have completed at least 30 credit hours (10 term courses) in the first teachable area and 18 credit hours (6 term courses) in the second teachable area or they must have completed at least 24 credit hours (8 term courses) in each of two teachable areas. All applicants must have completed at least one term English course.

Teachable subjects are: Biology, Business Administration, Canadian Studies, Chemistry, Classics, Commerce, Computer Science, Drama, Economics, English, Environmental Science, Family Studies, French, Geography, Graphic Arts and Design, Health, History, Home Economics, Information Technology, Languages, Mathematics, Music, Physical Education, Physics, Political Science, Technology Education, Theatre Arts, Visual Arts.

NOTE: Students entering this stream will be placed in a secondary school which could either be a middle school or a high school. We are unable to offer programs in all teachable areas. Applicants should contact the faculty for advice.

In addition to the above, applicants must complete an application package that includes:

1. Three written statements related to interest in, and goals for, pursuing the Education program
2. List of activities relevant to teaching
3. Three references

(FEAA) Faculty of Education Admission Advantage

A number of students will be guaranteed admission to the Faculty of Education (Fredericton) school years program:

1. After secondary school graduation providing they achieve a minimum graduation average of 80% and meet the teachable subject admission requirements for education within their first degree and meet progress criteria.
2. after first year in a program at UNB (Fredericton) provided they achieve a cumulative grade point average of 3.3, meet the teachable subject admission requirements for education within their first degree and meet progress criteria.

The Faculty of Education Admission Advantage extends conditional offers of acceptance into the Bachelor of Education program to exceptional high school and first year UNB (Fredericton) students. Faculty of Education Admission Advantage students apply to the Bachelor of Education program and to the University of New Brunswick Fredericton during the final year of secondary school or apply to the Bachelor of Education program during the first year of their UNB (Fredericton) program. Secondary school students should complete these steps:

1. Apply to an undergraduate program at UNB, by the application deadline of March 31st.
2. Indicate interest in the Faculty of Education Admission Advantage by checking the box in the online application.
3. Complete the components of Faculty of Education Admission Advantage supplementary application to be submitted.

First Year UNB (Fredericton) students should complete the initial component of the Faculty of Education Admission Advantage supplementary application to be submitted.

The competitive application for the Faculty of Education Admission Advantage requires that the applicant presents all courses necessary for admission to their first program choice (e.g., Bachelor of Arts) with an admission average of 80% if applying out of high school or an assessment grade point average of 3.3 if applying after completing a typical first year of study (30-39 ch).

(FEAA) Progress Criteria

To progress into the Bachelor of Education program, Faculty of Education Admission Advantage students need to:

1. Enrol at the University of New Brunswick (Fredericton) for their first degree.
2. Achieve a cumulative grade point average of 3.0 upon completion of that degree (degree must be completed within a five-year period).
3. Demonstrate continued involvement in leadership/achievement activities involving working with children, athletics, performing arts, student government, volunteer work, and community services.

4. Complete final component of Faculty of Education Admission Advantage supplementary application.

Securing Faculty of Education Admission Advantage status has the following benefits:

1. A place in the Bachelor of Education program, conditional upon meeting progress requirements.
2. Ongoing advising for the Faculty of Education to ensure students meet teachable admission requirements.

A place in the Faculty of Education will be assured to those students who are awarded a Faculty of Education Admission Advantage, provided they meet the progress criteria listed above upon graduation from their first UNB degree program.

Costs

In addition to those costs listed in Section C of this Calendar, students are responsible for all travel and accommodation costs related to the required practicum experiences throughout the entire BEd program.

University Regulations

Students are urged to read the General University Regulations, Section B of this Calendar, and in particular the subsection headed *Grading System and Classification*.

Any point not covered in the following regulations will be governed by the General University Regulations.

General Regulations

Student Standing

Letter grades are assigned in accordance with University regulations.

a. A grade of C shall be the minimum acceptable grade in courses taken to meet requirements for the Bachelor of Education degree.
b. A BEd degree shall be awarded to a student who successfully completes the number of credit hours and approved courses indicated in the program outlined. In addition, students must successfully complete the practicum component required by the degree program.

Credit Hours

The Bachelor of Education degree is a 60 ch program to be completed over three academic terms: fall, winter, and summer. All students must attend on a full-time basis. The Faculty of Education will prepare a timetable for each student each term.

Standing and Promotion Requirements

Per University Regulations.

Divisions and Distinctions

a. BEd degrees are awarded in divisions as stated in the University Regulations (Section B).
b. A student in the BEd program having a minimum cumulative grade point average of 3.8 in Faculty of Education courses, and no grade below C, and whose practicum is deemed satisfactory for this degree by the Dean of Education after consultation with the faculty members who supervised the student's practicum, shall be awarded the BEd degree with Distinction.

Repeating Courses

Per University Regulations.

Field Experiences (Practicum)

The Faculty of Education may only place students in school settings within the New Brunswick public school system in cooperation with the New Brunswick public school system, and with the ongoing permission of a School District or School as appropriate. Such Schools and/or School Districts are not required to accept or maintain intern placements.

a. Practicum placements are evaluated on a pass/fail basis. If an intern is removed from his/her practicum by the Faculty of Education, or a School District and/or a School, or their practicum performance does not meet expectations a grade of NCR will be assigned.
b. In their field experiences students participate in teaching and learning activities in an educational setting approved by the Faculty. Responsibility for arranging student teaching placements, throughout the province of New Brunswick, rests within the Faculty of Education. Students must not attempt to arrange their own practicum school placements. The Faculty of Education will attempt to secure one practicum placement for each student.
c. Students are responsible for all travel and living expenses incurred during the practicum.
d. Students wishing to be placed in a French Immersion classroom from their practicum must meet the minimum Oral Proficiency requirements of the School District.
e. Students who have failed the practicum (that is, received a grade of NCR) are required to wait one academic term before applying to the Faculty of Education for an opportunity to make a further attempt at the practicum. Students, in so applying to the Field Services Committee of the Faculty of Education, must establish that the factors causing the failure have changed and that there is reason to presume that a further attempt at the practicum would be successful. The request by a student to make a further attempt at the practicum must be submitted in writing and must satisfy the Dean of Education and the Field Services Committee on both of the

above points. In all such cases, there is no obligation on the part of the Faculty of Education, through the Dean of Education and the Field Services Committee, to grant students a chance to make a further attempt at the practicum. In cases where the Dean of Education and the Field Services Committee deny a student a chance to make a further attempt at the practicum, the student will be required to withdraw from the Faculty of Education.

f.   Any appeal with regard to receipt of a grade of NCR on the practicum must follow the University appeal policies. (See Section B, III, Item L: Review of Grades.)

g.   Students who do not complete the practicum for reasons other than receiving a grades of NCR and/or being removed from a practicum by the Faculty of Education or a School District and/or a School in the New Brunswick public school system may be awarded a grade of incomplete for the practicum. In such cases, the Faculty of Education shall work with the student to attempt to arrange a subsequent placement for the student, recognizing always the limitation to practicum placements set out in this regulation.

Residency Requirement
Students in the BEd degree program must normally complete a minimum of 60 ch in Education, including Field Studies, from the University of New Brunswick.

Time Limit
Bachelor of Education: the maximum time permitted between the first registration and the completion of the BEd degree in accordance with the regulations in effect at the time of first registration shall normally be 4 years.

BEd in Adult Education: the maximum time permitted between the first registration and completion of the BEd in Adult Education in accordance with the regulations in effect at the time of the first registration shall normally be 4 consecutive calendar years.

Wabanaki BEd (4-year Elementary): the maximum time permitted between the first registration and completion of the Wabanaki BEd (4-year Elementary) in accordance with the regulations in effect at the time of the first registration shall normally be 8 consecutive calendar years.

BEd in Early Childhood Education (2 year): the maximum time permitted between the first registration and completion of the BEd in Early Childhood Education in accordance with the regulations in effect at the time of the first registration shall normally be 4 consecutive calendar years.

Course Selection
Within the Bachelor of Education program, there are required courses and some elective space. Students should consult with Faculty of Education advisors when choosing electives.

Substitution Credits
Students may obtain substitution credit of up to 12 credit hours toward the BEd for education courses which have been taken at this or another institution, where the grade received is 'C' or higher, and which meet program requirements. In these cases, alternate education courses must be successfully completed to meet program requirements.

Re-registration
Students who have withdrawn from the Program must establish that the factors necessitating withdrawal have changed and that there is reason to assume that a further attempt would be successful. The request for re-registration must be submitted in writing and must satisfy the Dean of Education. In such cases there is no obligation on the part of the Faculty to place the student in a similar practicum.

The BEd Program
Students elect one of two distinct patterns in the BEd program: 1) School Years Education, or 2) Adult Education. The School Years pattern consists of the following:

BEd (School Years Education)
The BEd degree is awarded upon successful completion of 60 credit hours of study in Education following another Bachelor's degree. The School Years program focuses on all aspects of the education of children between the ages of 4 and 19, including schooling, community education, family education, and educational intervention. Particular emphasis is placed upon appropriate practice, the integration of subject area content and methodology, and the design of curriculum. The School Years pattern has the following components.

Note: For details of the Adult Education program, see BEd Adult Education

Note: For details of the Wabanaki BEd program, see Wabanaki BEd

Note: For details of the Early Childhood Education program, see BEd Early Childhood Education

Core Studies: ED 5001 Teaching and Learning Theories I, ED 5002 Teaching and Learning Theories II, ED 5003 Teaching and Learning Theories III, ED 5035 Inclusionary Practices, ED 5070 Cultural Contexts of Education, ED 5175 Classroom Assessment or ED 5561 Évaluation et Apprentissage, and one 3 credit hours course in Indigenous education.

Practicum: ED 5050 The school-based experience component of the B.Ed. involves one week in schools the opening week in September, and two subsequent practicum blocks at the end of both the fall and winter terms.

Pedagogical Studies: Listed in the Fredericton Courses Section of the Calendar. Courses about the teaching of school subjects, enabling students to specialize in particular subjects if desired; courses about particular learner levels; courses which focus on the integration of subject matter, methodologies, or educational concepts across the curriculum.

Common Core Studies
ED 5001 Teaching and Learning Theories I
ED 5002 Teaching and Learning Theories II
ED 5003 Teaching and Learning Theories III
ED 5035 Inclusionary Practices
ED 5050 Practicum
ED 5070 Cultural Contexts of Education
ED 5175 Classroom Assessment
ED 5561 Évaluation et Apprentissage
Plus, one 3 ch course in Indigenous Education

Option 1:
The elementary stream is designed for prospective teachers who wish to be knowledgeable in teaching the broad range of subjects reflected in the elementary school curriculum. Students take the following courses in seven (7) subject areas and should consult with Faculty Advisors when a specific course is not listed.

1.   Visual Education - ED 5209
2.   Literacy - ED 5355 or 5563
3.   Mathematics Education - ED 5424
4.   Music Education - ED 5242 or ED 5243
5.   Health and Physical Education - ED 5478
6.   Science - ED 5505
7.   Social Studies - ED 5621

With the remaining 6 credit hours, students may choose electives from the following focus areas.

Focus Areas for Option 1

- Arts Education (Visual Arts/Drama)
- Early Childhood Education
- Indigenous Education
- Health and Physical Education
- Literacy/Drama Education
- Mathematics Education
- Music Education
- Second Language Education (ESL)
- Second Language Education (FSL)
- Science Education
- Social Studies Education (including geography)
- Exceptional Learner

Option 2:
The secondary stream is designed for prospective teachers who wish to specialize in teaching one or more of the subjects reflected in the middle/secondary school curriculum. Normally, students pursue teachable concentrations based on course work from their previous undergraduate degree. Each concentration must concsist of 9 ch in the areas chosen (those in the Health and Physical Education concentration must complete 12 ch in that area). The first concentration MUST be in a teachable area.

Concentration Areas for Program Option 2

- Arts Education (Visual Arts/Music/Drama)
- Early Childhood Education
- Health and Physical Education
- Literacy/Drama Education
- Mathematics Education
- Second Language Education (ESL)
- Second Language Education (FSL)
- Science Education
- Social Studies Education (including geography)
- Exceptional Learners
- Technology Education

Concentration course requirements for Program Option 2
Arts Education (choose 9 ch)
Visual Education: ED 5209, ED 5154, ED 5213
Music: ED 5243, ED 4242, ED 5241 and ED 5242 (choose 9 ch)
Drama: ED 5314; ED 5315
Indigenous Education
Choose courses in consultation with Mi'kmaq-Wolastoqey Centre.
Health and Physical Education
Health Education: ED 3063, ED 4451
Physical Education: ED 5488, ED 5492, and ED 5493
Choose all three Phys. Ed. Courses and one health education course
Literacy/Drama Education
ED 5353, ED 5354, plus, one other approved literacy/drama education course.
Mathematics Education
ED 5422 plus, two other mathematics education courses
Second Language Education (FSL)

ED 5561, ED 5562, ED 5563, ED 5568, ED 5569 or ED 5575. For FSL certificate, consult the Faculty.

Second Language Education (ESL)
ED 5564, ED 5565, ED 5566, ED 5575 for CTESL certificate, consult the Faculty.

Science Education
ED 5511, ED 5513, plus, one other approved science education course

Social Studies Education
ED 5625, ED 5626 plus, one other approved social studies education course

Exceptional Learners
ED 5046, ED 5091, ED 5096

Technology Education
ED 3943, ED 4973, ED 5977

Pedagogical Studies Courses and Electives
NOTE: Students pursuing the School Years program may take no more than one adult education course.

Adult Education
ED 3113 Communication Practices for Adult Education
ED 3115 Methods & strategies in Adult Education
ED 4110 Methods and Strategies in Adult Education: Theory and Practice
ED 4113 Introduction to Distance Learning in Adult Education
ED 4115 Issues in Adult Literacy

Critical Studies
ED 5154 Creativity, Images, and Meaning

Early Childhood Education
ED 5032 Inclusion from the Early Years
ED 5062 Cultural Constructions of Childhood
ED 5102 Curriculum and Evaluation in the Early Years
ED 5105 Connecting Home and Schooled Literacies
ED 5167 Interpreting Play for Curriculum Development
ED 5182 Problem Solving with Young Children
ED 5184 Parental Involvement in Schooling
ED 5362 Symbolic Representation in Children's Play, Pictures and Print
ED 5561 Évaluation et apprentissages

Indigenous Education
ABRG 3688 Contemporary Canadian First Nations Children's Literature
ED 3022 First Nations Epistemology
ED 3043 Indigenous Education
ED 4686 Teaching the First Nations Learner
ED 4688 Teaching First Nations Children's Literature
ED 5162 Integrated Curriculum for the First Nations Learner
ED 5683 First Nations Education Seminar
ED 5684 The Anthropology of Knowledge
ED 5685 Teaching First Nations Language

Health Education
ED 4451 Health Education

Inclusive Education
ED 4089 Gifted Education: Introduction
ED 5046 Educating At-Risk Students
ED 5071 Education in International Contexts
ED 5078 Communication Disorders in the Classroom
ED 5091 Learning Disabilities: Introduction
ED 5096 Behavioural/Emotional Disorders: Introduction

Independent Studies
ED 4191, 5191 Independent Studies
ED 5013, 5033, 5043 Special Topics in Education

Literacy Education
ED 3362 Access to Literacy
ED 5105 Connecting Home and Schooled Literacies
ED 5313 Cultural Studies through Theatre
ED 5314 Drama Across the Curriculum
ED 5315 Dramatization of Literature
ED 5352 Teaching Writing
ED 5353 Teaching Secondary English I
ED 5354 Teaching Secondary English II
ED 5361 Challenging the Authority of Texts
ED 5362 Symbolic Representation in Children's Play, Pictures and Print
ED 5357 Poetry K-12
ED 5355 Literacy Learning in Early Years
ED 5356 Literacy Learning in the Middle School
ED 5358 Critical/Cultural Literacy
ED 5359 Cultivating Proficient Readers
ED 5562 La littératie a l'élémentaire I
ED 5563 La littératie a l'élémentaire II
ED 5684 The Anthropology of Literacy and Learning

Mathematics Education
ED 3415 Developing Numeracy
ED 3416 Developing Geometrical Concepts
ED 5422 Teaching High School Mathematics
ED 5423 Teaching Middle School Mathematics
ED 5424 Teaching Mathematics in Elementary School
ED 5427 Trends in Mathematical Education
ED 5428 Mathematics Across the Curriculum
ED 5429 The Role of Language in the Teaching of Mathematics

Measurement and Evaluation
ED 5171 Assessing Adult Learning
ED 5175 Classroom Assessment
ED 5561 Evaluation et Apprentissage

Multimedia Studies
ED 5698 Multimedia Studies in Education
ED 5699 Cultural Studies Through Multimedia

Music Education
ED 5242 Music for the Classroom Teacher
ED 5423 Music in the Elementary School
ED 5242 Special Topics in Music Education
FNAT 2113 Introduction to Music

Physical Education
ED 3475 Movement Education for the Elementary Teacher
ED 5478 Health and Physical Education in the Elementary School
ED 5492 Introduction to the Teaching of Secondary Physical Education
ED 5488 Teaching of Games for the Secondary Physical Education Teacher
ED 5493 Teaching Methods in Secondary Physical Education
ED 5494 Teaching Physical Education

School Counselling
ED 5065 Personal Growth and Helping
ED 5141 Orientation to Counselling
ED 5142 Career Guidance
ED 5144 Group Theory and Skills

Science Education
ED 3512 The Nature(s) of Science: Implications for Teaching Science
ED 3513 Science Education Policy and Practice
ED 5505 Teaching Science in the Elementary School
ED 5511 Introduction to Science Education
ED 5515 Science Education and the Learner
ED 5513 Advanced Studies in Science Education I
ED 5512, ED 5514 Special Topics in Science Education I, II
ED 5521 Science Education Seminar and Project
(**NOTE:** All courses listed in this section with French titles/descriptions are offered in French. Students may be required to take a language proficiency test before permission is granted to enrol.)

Second Language Education
ED 5561 Évaluation et Apprentissages
ED 5562 La littératie a l'élémentaire I
ED 5563 La littératie a l'élémentaire II
ED 5564 Introduction to Second Language Education
ED 5565 Advanced Studies in ESL Education
ED 5566 Field Experience in TESL
ED 5568 Français langue seconde II – Secondaire
ED 5569 Français langue seconde II – Secondaire
ED 5575 Reflection on Second Language Theory and Practice

Social Studies Education
ED 3621 Introduction to the Social Studies
ED 3641 Geography in Education
ED 4621 Learning to Learn about teaching in Social Studies and Science
ED 4643 Geography of Canada
ED 5620 Introduction to Teaching Social Studies
ED 5621 Introduction to Social Studies in Elementary Education
ED 5622 Global Education
ED 5623 Teaching Canadian Studies
ED 5624 Exploring and Teaching about Worldviews
ED 5625 Introduction to Teaching Secondary Social Studies
ED 5626 Introduction to Teaching Secondary History

Visual Education
ED 5154 Creativity, Images and Meaning
ED 5209 Creativity and Visual Arts in Teaching and Learning
ED 5211 Integrated Learning Through Art
ED 5212 Curriculum Development in Art Education
ED 5213 Issues in Art Education

BEd in Adult Education (120 ch)
The BEd in Adult Education consists of a minimum of 120 ch of accumulated study. This program is open to individuals who qualify as mature students. The Program consists of three major elements, with credits normally assigned as follows:

Arts/Science Courses 30 ch
Education Courses: 48 ch - Core Studies (9 or 12 ch), - Field Studies (3 or 6 or 9 ch), Approved Courses (remaining ch)
Occupational/Technical/Academic Specialization Courses: 42 ch - Approved electives or credit for prior experience. At least half the credits for the BEd degree must be UNB credits. Of the 120 ch required for the four- year BEd in Adult Education a maximum of 42 ch is allowed for prior learning.

BEd in Adult Education, Consecutive (60 ch)

The Adult Education pattern in the BEd degree is a 60 ch program that focuses on all aspects of teaching adult learners. In consultation with Faculty of Education advisors, students choose appropriate courses according to the following requirements.
Core Studies:

ED 3024, ED 3115 & ED 4042 Additional approved Adult Education options may be taken from human development and learning; exceptional learners, history, philosophy, and practice; social, cultural, and political contexts.

Field Studies:
ED 3015 (3 ch) or ED 5010 (6 ch) Approved practicum, Seminars, and independent study; site of practicum to be negotiated

Curriculum Studies:
Remaining ch Approved courses about the development and delivery of Adult Education programs in Institutions of learning, workplaces and society; about adult learning and development; about the nature, scope, and field of Adult Education. Up to six (6) credit hours for prior learning may be granted in consultation with Faculty of Education advisors and in accordance with PLA regulations.

Outcome:
Preparation for teaching adult learners or for coordinating, developing, or managing programs of adult learning.

Core and Curriculum Studies

Inclusive Education
Adult Education:
ED 4032 Adult Learners with Exceptionalities

Field Studies
Adult Education:
ED 3015 Practicum in Adult Education
ED 5010 Advanced Practicum in Adult Education
ED 5011 Preparing for Prior Learning Assessment

History, Philosophy and Practice
Adult Education:
ED 3011 Professional Ethics for Practitioners of Adult Education
ED 4042 Introduction to Adult Education

Human Development and Learning
Adult Education:
ED 3024 Understanding the Adult Learner
ED 4102 Transition to Adulthood
ED 5022 Transformative Learning

Independent Studies
ED 4191, ED 5191 Independent Studies
ED 5156 Special Topics in Adult Education

Social, Cultural and Political Contexts of Education
Adult Education:
ED 3114 Introduction to Workplace Learning
ED 4012 Diversity and Inclusion in Adult Learning
ED 4045 Issues in Training and Development
ED 4061 Advising and Mentoring Adult Learners
ED 5157 Adult Education and Community Development

Wabanaki BEd (4-year, Elementary)
The Mi'kmaq-Wolastoqey Centre (See Section D) has administered a BEd for First Nations students at UNB since 1977. We have recently undertaken a review of this BEd and made changes to the program to address today's realities in terms of technologies, TRC recommendations, and most importantly Wabanaki* community needs and input. Among these changes is the name change to Wabanaki Bachelor of Education (4-year, Elementary) [WBEd].

> *"Wabanaki means "the first to greet the dawn" and is an inclusive term for all Indigenous peoples of the Atlantic region (Wolastoqey, Mi'kmaq, Passamaquoddy, Penobscot, Abanaki, Innu, Innuit, Métis, and Urban Aboriginal peoples."*

Features of the WBEd

- Four-year Bachelor of Education degree specializing in Wabanaki* languages, cultures, and worldviews through involvement of Elders and other knowledge keepers
- Program delivered to Wabanaki communities using land-based and place-based pedagogies as well as current online learning technologies.
- Honours lived-experiences and current realities of students enrolled in the program ˜can complete program from home (with the exception of land-based gatherings).
- Practical school experience every year embedded within select courses.
- Cohort model: 30 students will be enrolled in the program which will be completed in 4 years (including practicum).
- **NEW!** Mi'kmaq or Wolastoqey language certificate within the degree that includes: four language courses (Mi'kmaq or Wolastoqey), one language in a community school.
- Qualifies for New Brunswick Teacher Certification level IV.

The Wabanaki BEd (4-Year, Elementary) consists of 138 ch of study, including the practicum. The courses comprise three major areas, with credits normally assigned as follows:

Content block courses (57 ch):
Literacy Education (12 ch): ED 5355, ED 5102, ED 5359, ED 4688
Math Education (12 ch): ED 3415, ED 3416, ED 5424, ED 5425
Science Education (9 ch): ED 5505, ED 5506, ED 5507
Social Studies Education (9 ch): ED 5621, ED 5627, ED 5645
Aesthetics Education (6 ch): ED 5209, ED 5243

Health Education (6 ch): ED 5478, ED 3063
Technology Education (3 ch): ED 5976
Core Studies (63 ch):
Foundations (33 ch): ED 5001, ED 5002, ED 3033, ED 5175, ED 3051, ED 3043, ED 4685, ED 5075, ED 3031, ED 5097, ED 3021
Language Certificate (15 ch): ABRG 3685 or ABRG 3686, ABRG 3695 or ABRG 3696, ABRG 4675 or ABRG 4696, ABRG 4676, ABRG 4697, ED 5586
Other Teachable Courses (15 ch): ENGL 1103, ENGL 1104, ED 3053, ABRG 3684, ABRG 4686
Practicum (18 ch): ED 4000

WBED (4-Year, Elementary) Course Roll-out

Fall		Winter		Summer	
				Orientation – Four-day land-based gathering to introduce program, build cohort supports, engage in ceremony and begin courses ABRG 3684 and ABRG 4686.	
Year 1					
Core Studies (6 ch)	ABRG 3684 Aspects of Mi'kmaq/ Wolastoqey Culture	Literacy (12 ch)	ED 5355 Literacy Learning in Early Year	Law (3 ch)	ED 3051 School Law and Organization
	ABRG 4686 Wabanaki Worldviews				
Core Studies (6 ch)	ED 3033 Teaching in a Cultural Context		ED 5102 Curriculum and evaluation in the early years	Teachable (English) (6 ch)	ENGL 1103 Fundamentals of Clear Writing
	ED 5175 Classroom Assessment		ED 5359 Cultivating proficient readers		ENGL 1104 Fundamentals of Effective Writing
			ED 4688 Teaching First Nations Children's Literature - School Experience		
Year 2					
Teaching and Learning Theories (6 ch)	ED 5001, ED 5002 Teaching and Learning Theories	Science (9 ch)	ED 5505 Teaching Science in Elementary School	Aesthetics (6 ch)	ED 5209 Creativity and Visual Arts In Teaching and Learning
	ED 5003 Teaching and Learning Theories School Experience		ED 5506 The Nature of Science		ED 5243 Music in The Elementary School
Language (6 ch)	ABRG 3685/3695 Mi'kmaq Language (I and II) OR		ED 5507 Indigenous Perspectives in Science	Health & Physical Education	ED 5478 Health and Physical Education in Elementary School
	ABRG 3686/3696 Wolastoqey Latuwewakon (I and II)	Core Studies (3 ch)	ED 5075 History of Education		ED 3063 Health Promotion in School
Year 3					
Math (12 ch)	ED 3415 Developing Numeracy	Core Studies (6 ch)	ED 3031 Education of Exceptional Learners	Language (6 ch)	ABRG 4675/4676 Mi'kmaq Language (III and IV) OR
	ED 3416 Developing Geometrical Concepts		ED 5097 Differentiating Instruction in the Classroom		ABRG 4696/4697 Wolastoqey Latuwewakon (III and IV)
	ED 5424 Teaching Math in Elementary School - School Experience	Core Studies (3 ch)	ED 3021 Human Development and Learning : An Overview	Technology (3 ch)	ED 5976 Instructional Technology Across the Curriculum
	ED 5425 Indigenous Mathematics				
Year 4					
Social Studies (9 ch)	ED 5621 An introduction to social studies in elementary education	Practicum (9 ch)	ED 4000 Practicum (For the Certificate in Mi'kmaq or Wolastoqey language, half the practicum must be completed in a First Nations community school and teaching the language)	Culture Studies (9 ch)	ED 3043 Indigenous education
	ED 5627 Contact and post-contact around the world				ED 3053 Wabanaki schools in New Brunswick
	ED 5645 Treaties and Canadian geography				ED 4685 Treaty Education
Language (3 ch)	ED 5586 Mi'kmaq and Wolastoqey language teaching methods			On-the-land gathering to celebrate completion of the degree program; awards, recognitions, gratitude	

ED 5102 Curriculum and Evaluation in the Early Years
ED 5105 Connecting Home and School Literacies
ED 5167 Interpreting Play for Curriculum Development
ED 5175 Classroom Assessment

ED 5355 Literacy Learning in the Early Years
ED 5362 Symbolic Representation in Children's Play, Pictures and Print
ED 3020 Practicum
ED 3043 Indigenous Education
ED 4054 Research in Early Childhood Studies
ED 4361 Mulit-modal Literacies in Early Childhood Education
ED 4363 Children's Literature, Singing, Poetry and Performance
ED 4452 Health, Equity and Well-Being
ED 5103 Project Approach in the Early Years
ED 5104 Observation and Pedagogical Documentation
ED 5106 Digital Literacies in the Early Years
ED 5181 Feminist Theory and Education
ED 5182 Problem Solving with Young Children
ED 5242 Music for Classroom Teacher

BEd in Early Childhood Education (2-year)
The BEd in ECE consists of the completion of 78 credit hours that focus on the understanding of current early childhood research, theory, and practice, policy, and pedagogical practices in a range of early childhood community and public school settings. Typically, applicants enter this degree program with a two-year diploma in ECE from a recognized community college.
Courses
ED 3211 Introduction to Art and Creative Education
ED 3415 Developing Numeracy
ED 3511 Introduction to Science Education
ED 3475 Movement Education for the Elementary Teacher
ED 5062 Cultural Constructions of Childhood

ED 5621 Introduction to Social Studies in Elementary Education
ED 4021 Practicum
Length of program options:

Certificates and Diplomas

Wocopsqoltine weci Spiqiqahtuweq/Weli'kwejik Elaqsultiek Program

The Faculty of Education offers Wocopsqoltine weci Spiqiqahtuweq / Weli'kwejik Elaqsultiek Program for First Nations students who are preparing for admission to a UNB degree program. Applications for the program are welcome from:

1. High school graduates.
2. Students with Grade 11 who have been out of school for at least 3 years.
3. Mature students as defined in the UNB undergraduate Calendar.

Admissions are competitive. Satisfaction of the minimum criteria will not guarantee acceptance. The deadline for applications is March 31. Late applications can be considered only if spaces remain unfilled. Wocopsqoltine weci Spiqiqahtuweq / Weli'kwejik Elaqsultiek students register for four courses each term. Course schedules are individually planned in consultation with the Faculty in which a student wishes to enrol the following year.

The maximum time permitted between the first registration and the completion of the Bridging Year in accordance with the regulations in effect at the time of first registration shall be two consecutive academic terms. Students who complete the Wocopsqoltine weci Spiqiqahtuweq / Weli'kwejik Elaqsultiek with a minimum of 24 ch or the equivalent of 8 term courses and with a GPA of 2.0 or higher in other courses will be guaranteed admission to the degree program for which the Bridging Year was designed. Refer to UNB academic regulations for students who do not succeed in meeting these requirements.

Certificate in Adult Education

The Faculty of Education offers degree credit courses leading to a Certificate in Adult Education. The certificate program is open to individuals who have met normal admission requirements for the BEd. The certificate requires a total of 36 ch. Consult the UNB Certificate Program Coordinator for a listing of appropriate courses.

Certificate in Early Childhood Education

The certificate is designed to provide participants with the knowledge and skills that will enable them to foster dynamic learning environments for young children. The Certificate in Early Childhood Education requires successful completion of:

1. Required:

    ED 5355 Literacy Learning the Early Years

2. Three of:

    ED 5102 Curriculum and Evaluation in the Early Years
    ED 5105 Connecting Home and School Literacies
    ED 5167 Interpreting Play for Curriculum Development
    ED 5362 Symbolic Representation for Children's Play Pictures and Print

3. A practicum in a K-2 setting (at least 50%)

Certificate in Teaching French as a Second Language (CTFSL)
Program Description
This certificate is designed to provide participants with the knowledge and skills necessary to become effective teachers of French as a Second Language (FSL). The CTFSL requires successful completion of:

1. ED 5568, ED 5569, ED 5575 (secondary stream)

    OR
    ED 5562, ED 5563, ED 5575 (elementary stream)

2. A practicum in an FSL context (at least 50%)

3. The New Brunswick Oral Proficiency Interview (Minimum of Advanced Plus for French immersion, and Advanced for all other FSL teaching contexts).

Eligibility
In order to be eligible to enrol in the CTFSL, candidates must be currently enrolled in a B.Ed. program and be completing a concentration in FSL.

Certificate in Teaching English as a Second Language (CTESL)
Program Description
This Certificate Program is designed to provide participants with knowledge and skills necessary to become effective teachers of English as a second language (ESL). The CTESL requires successful completion of:

1. Three compulsory courses:
    - ED 5564 - Introduction to Second Language Education
    - ED 5565 - Advanced Studies in ESL Education

Full Time - two years, 6 full terms (4 courses per term on split term basis)
Part Time - maximum five years to complete

- ED 5575 - Reflection on Second Language Theory and Practice
2. One approved course in the area of language education, cultural studies or literacy, and
3. Practicum in TESL (ED 5566 or equivalent)

Eligibility
In order to be eligible to enroll in the CTESL, candidates must either have completed an undergraduate degree or be currently enrolled in a BEd program.
Candidates whose first language is not English must also demonstrate a high level of English language proficiency as evidenced by:

1. A score of 600 or better on the TOEFL
2. And a score of 55 or better on the TSE (Test of Spoken English)
3. And a score of 5.5 or better on the TWE (Test of Written English)

Equivalent tests may be considered.
Practicum
Students pursuing the CTESL must successfully complete ED 5566 - Field Experience in TESL. This is a 3-credit hour practicum that involves approved short-term experience working in an ESL setting. Students enrolled in a BEd program may request that ED 5566 be waived if they have had equivalent practical experience in ESL education during their regular BEd teaching practicum. Recognition for any such equivalent experience must be approved in advance.
NOTE: Students wishing to obtain both the Certificate in Teaching French as a Second Language and the Certificate in Teaching English as a Second Language must take 12 ch of different courses. In other words, the same courses may not be applied to both certificates.
The Faculty of Education places students in school settings at the discretion of the public school system. Although the Faculty cannot guarantee a placement in that system, it will make its best effort to find an initial placement for any student eligible for the practicum (subject to approval by the University).

International Baccalaureate in Teaching and Learning Certificate - UNB IB-recognized university

In partnership with the International Baccalaureate Organization (IBO), we are pleased to be an IB-recognized university offering courses that lead to the International Baccalaureate (IB) Educator Certificate in Teaching and Learning. For details see the faculty website:
https://www.unb.ca/fredericton/education/undergrad/certificates.html#ib

Certificate in First Nations Governance and Leadership
Program Description
The First Nations Governance & Leadership Certificate was formed after many conversations with Elders and community members, representing various communities throughout Wabanaki territory. These conversations identified leadership and administrative skills as high-priority objectives, together with deep and practical knowledge of the laws, policies, and practices governing the operations of First Nations and the Canadian State. The themes that emerged focused on First Nations content, theory, and practice:

1. First Nations history, government, politics, business economics
2. Relations with Canada: law, Indian Act, service treaties, land claims
3. Negotiation practices and procedures
4. Development and maintenance of healthy workplace relationships
5. Practical experience in one or more work placements
6. Expert instruction, with First Nations instructors when possible
7. Use of distance education technology and on-site course delivery
8. Research and proposal writing
9. Continuing community input into the degree program

UNB responded to these identified themes by developing a two-year, 60 credit-hour, certificate program that offered courses in these content areas, enriched with Wabanaki knowledge, culture, and understanding of leadership. The certificate also requires students to complete language and culture courses, as a knowledge of language and culture has been identified as being vital to the leaders of tomorrow. This Certificate provides a foundation of knowledge for future First Nations leaders and administrators. Students are required to complete the twenty courses listed for the certificate, which includes 6 ch in First Nations language courses. (See table 1: FNGL course schedule).
The program is delivered in a blended format, with some courses being taught remotely through UNB's online platform, Desire2Learn, and some being taught on location within Wabanaki communities. Courses also incorporate land-based and experiential learning opportunities.

Table 1: FNGL course schedule

	Fall September-December	Winter January-April	Summer May-June
Year 1 Credits Earned: 30	ENGL 1103 Fundamentals of Clear Writing	ABRG 3056 Practicing Leadership in First Nations Community Projects	ABRG 3114 Introduction to Workplace Learning
	ABRG 3686 Introductory Wolastoqey Language	ABRG 3696 Intermediate Wolastoqey Language	ECON 1014 Principles of Microeconomics: Critical Perspectives
	ABRG 4665 First Nations Perspectives & Organizational Behaviour	ADM 1192 Business Planning and Entrepreneurship	
	ABRG 1411 Introduction to Finite Math	ENGL 1104 Fundamentals of Effective Writing	
Year 2 Credits Earned: 30 And Certificate Complete	ABRG 3055 First Nations Leadership Foundations	ABRG 3621 Current Topics in Self-Governance	ABRG 3922 Technology in Governance and Leadership
	ABRG 4194 First Nations Land Claims	ABRG 3684 Aspects of Wolastoqey and Mi'kmaq Culture	SOCI 3635 Conflict Resolution
	ADM 1213 Financial Accounting	ADM 2223 Managerial Accounting	Certificate Complete
	ECON 1023 Principles of Macroeconomics	ADM 1512 Organizational Behaviour	

Diploma in Advanced Undergraduate Study (DAUS)

The DAUS is a 36 credit hour program designed for students with a degree in Education who wish to gain additional teaching qualifications. Students may choose a general pattern (Professional Growth) or a specific area of specialization from the following:

1. Professional Growth
2. Early Childhood
3. Elementary Education
4. School Counselling and Special Education
5. Literacy Education
6. French Immersion Education
7. French Second Language Education
8. Mathematics and Literacy Education
9. Science Education
10. Social Studies Education

Consult the Faculty for course requirements.

Regulations for DAUS Not Covered by General University Regulats

1. *Admission*

Students who hold a BEd degree or the equivalent (e.g., certified teachers with a BA or BT) are eligible for admission to the DAUS.

2. *Student Standing*

a. A grade of D shall meet the prerequisite requirements for DAUS courses unless otherwise stated in the Calendar.
b. In course offerings of other Faculties/Departments, students must meet the prerequisite requirements of that Faculty/Department.
c. A grade of C shall be the minimum acceptable grade in courses for the DAUS.
d. No course can be credited without prior approval of a faculty advisor.

3. *Residency Requirements*

Students must normally complete a minimum of 24 credit hours of work for the DAUS on campus as full or part-time students.

4. *Transfer Credits*

Students may not transfer more than 12 credit hours of work from another university for credit toward the DAUS. No surplus credits from the BEd other than extra courses taken in the final year may be transferred in for credit. No courses taken prior to enrolment in the BEd may be transferred in for credit. When applying for the DAUS, students may transfer only 12 ch taken prior to admission to the program.

5. *Time Limit*

In accordance with the regulations in effect at the time of registration, the maximum time permitted between the first registration and completion of the DAUS will be six years.

BACHELOR OF GEOMATICS

The Department of Geodesy and Geomatics Engineering, in the Faculty of Engineering, offers a non-engineering baccalaureate degree, Bachelor of Geomatics.

NOTE: For Department information, see the Bachelor of Science in Engineering (Geomatics Engineering) program section.

Even though admission to the Geomatics degree may be granted after completion of the appropriate secondary school courses, it is preferred that applicants have successfully completed a programme of geomatics engineering technology (GET) or its equivalent. Usually at least two years in duration, the GET diploma should have included or have been supplemented with courses in calculus, computer science, and probability and statistics at a level equivalent to first-year university. Some advanced credit for those academic efforts, or for academic efforts at any other form of post-secondary education, may then be given.

The recommended first-year calculus courses for students who have obtained a passing score on the Department of Mathematics and Statistics placement test (offered during the orientation session at the beginning of the fall term) are MATH 1003 and MATH 1013. Students with insufficient scores may be required to take remedial mathematics courses, which may prolong their studies at UNB because of prerequisite sequencing.

The Bachelor of Geomatics cannot be obtained after having completed the Bachelor of Science in Engineering in Geomatics Engineering.

Curriculum

With a minimum of 120 credit hours (ch) in the Geomatics program, students are required to complete:

a. a core of mathematics, computer science, general science, and geomatics subjects; and
b. a minimum of 9 ch of approved technical electives, with at least 6 ch of GGE 5000 level courses.

Credit hours for courses are listed in the course descriptions portion of the calendar.

A minimum grade of C is required for all courses to be used as credit toward the degree.

Students who have previous post-secondary educational efforts are advised to write to the Chair of the Department for information on credits that may be awarded.

Students who wish to academically prepare to become professional land surveyors should follow the Cadastral Surveying Option outlined below. The program has been designed to be completed in 6 terms, with reasonable course loads. Students may proceed at a slower rate but all requirements must be completed within 8 consecutive years. Detailed program information is available from the Department.

Courses

Descriptions of courses offered by the various Departments are given in the "Fredericton Courses" Section of this Calendar.

Core Courses (all required)

CE 3963 Engineering Economy
CS 1003 Programming and Problem Solving for Engineers
CS 3113 Introduction to Numerical Methods
ECON 1073 Economics for Engineers
ENGG 4013 Law and Ethics for Engineers
GGE 1001 Introduction to Geodesy & Geomatics
GGE 2012 Advanced Surveying
GGE 2013 Advanced Surveying Practicum or GGE 2014 Advanced Surveying Practicum (Off-campus)
GGE 3423 Introduction to Geographic Information Systems
GGE 2501 Land Administration I
GGE 3022 Survey Design and Analysis
GGE 3023 Survey Design Practicum or GGE 3024 Survey Design Practicum (Off-campus)
GGE 3042 Introduction to Global Navigation Satellite Systems
GGE 3111 Introduction to Adjustment Calculus
GGE 3122 Advanced Adjustment Calculus
GGE 3202 Geodesy I
GGE 3342 Remote Sensing
GGE 3353 Ocean Mapping
GGE 3423 Introduction to Geographic Information Systems
GGE 4211 Geodesy II
GGE 4313 Airborne Mapping Systems
GGE 4423 Advanced Geographic Information Systems
GGE 4513 Survey Law I
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
STAT 2593 Probability and Statistics for Engineers
TME 3313 Managing Engineering & Information Technology Projects

Technical Electives

GGE 5011 Oceanography, Tides, and Water Levels
GGE 5012 Marine Geology and Geophysics
GGE 5022 Precision Surveying
GGE 5042 Kinematic Positioning

GGE 5083 Hydrographic Field Operations
GGE 5222 Gravity Field in Geomatics
GGE 5242 Global Navigation Satellite Systems for Geodesy
GGE 5311 Advanced Hydrography
GGE 5322 Digital Image Processing
GGE 5341 Advanced Technologies in Remote Sensing
GGE 5401 Geospatial Development
GGE 5402 Geographic Databases
GGE 5403 Web Mapping and Geospatial Web Services
GGE 5405 Introduction to Big Data & Data Science
GGE 5410 3D Geographic Information Systems
GGE 5415 Real-Time Mobility Data Analytics
GGE 5413 Special Studies in Digital Mapping
GGE 5522 Survey Law II
GGE 5833 Land Use Planning for Geomatics
GGE 5701 Special Studies in Geomatics I
GGE 5702 Special Studies in Geomatics II
GGE 5703 Special Studies in Geomatics III

Other technical electives may be taken subject to Departmental approval. Students are cautioned that not all technical electives may be offered every year.

Cadastral Surveying Option within Geomatics

Students who complete the Bachelor of Geomatics at UNB with GGE 5833, GGE 5022, and GGE 5521 or 5522 will have the following notation placed on their transcripts: "COMPLETED CADASTRAL SURVEYING OPTION". This option has been accredited by the Canadian Board of Examiners for Professional Surveyors

ENVIRONMENTAL STUDIES PROGRAM

General Information

Environmental Studies interdisciplinary programs provide an academic framework for understanding the growing body of literature and scholarship on environmental problems. Students will learn about major environmental problems facing contemporary society, and acquire the interdisciplinary tools required to analyze, critique, and solve them. Both theoretical and applied approaches will be emphasized to varying degrees within the curriculum.

Eligibility

Environmental studies courses are open to any student in any faculty electives contributing, towards a Minor, or a Secondary Major. There is no official admission to the Environmental Studies Minor or Secondary Major programs. Students may take the required credit hours at any time throughout their program, and will indicate their desire to be considered for either the Minor or Secondary Major when applying to graduate. Students are advised to contact the coordinator of the Environmental Studies program early on in their studies to ensure they will have all necessary credits. With the permission of the Coordinator of Environmental Studies, students may count the following for credit in the Minor and Secondary Major programs: (i) UNB course credits not on the list of Environmental Studies elective courses (provided below), but approved by the relevant Faculty at UNB and deemed relevant by the coordinator of the Environmental Studies program; and (ii) course credits from other universities which have been approved by the relevant Faculty at UNB and deemed relevant by the coordinator of the Environmental Studies program. **NOTE**: Any course required by a student's primary major (as a core course) cannot be used as an Environmental Studies course elective. However, students can count approved elective courses towards one or more minors. Students should also be aware that some courses listed above have *Prerequisites*.

Programs of Study

Environmental Studies Minor

The Environmental Studies Minor consists of 24 ch of core and elective courses, selected in consultation with the Coordinator of Environmental Studies. Students are required to take:

1. 6 ch of core Environmental Studies (ENVS) courses.
2. 18 ch of course work chosen from a list of approved elective courses (provided below). One elective course must be taken under each of three discipline headings specified in the list of elective courses.
3. Additional courses may be approved for electives by the Coordinator Environmental Studies

Environmental Studies Secondary Major

The Environmental Studies Secondary Major consists of 30 ch of core and elective courses, selected in consultation with the Coordinator of Environmental Studies. Students are required to complete:

1. 6 ch of core Environmental Studies (ENVS) courses.
2. 24 ch of course work chosen from a list of approved elective courses (provided below). A minimum of 18 ch shall be upper level courses (i.e., 3000 level courses and above), and at least one course from each of the three discipline headings specified in the list of elective courses must be taken. A grade of C or better in each

course is required for credit in the Environmental Studies Secondary Major program.

Courses

Core Courses:

ENVS 4001 Environmental Impact Assessment and Management (3 ch)

Elective Courses:

Science Group

BIOL 2003 Introduction to Ecology
BIOL 3459 Economic Botany
BIOL 4233 Conservation Biology
BIOL 4351 Climate Change and Environmental Response
BIOL 4773 River and Lake Ecosystems
BIOL 4863 Environmental Biology
ENR 3111 Estuary and Ocean Ecosystems
ENR 3532 Ecohydrology
ENR 4111 Fisheries and Aquatic Sciences Techniques
FOR 3445 Forest Ecology: Populations and Communities
FOR 3456 Forest Watershed and Forest Fire Management
FOR 4425 Conservation Genetics
FOR 4576 Forest Hydrology and Aquatic Habitats
ESCI 2602 Principles of Geochemistry
ESCI 3442 Geohydrology
ESCI 3631 Geochemistry of Natural Waters
PHYS 1803 Physics and Society
PHYS 2902 Environmental Physics

Applied Science Group

BIOL 4191 Wildlife Management
CE 3403 Environmental Engineering
CE 3713 Hydraulics and Hydrology
CE 5153 Environmental Geotechnics
CE 5402 Environmental Planning for Capital Works
CE 5421 Water Quality and Treatment
CHE 5313 Energy and the Environment
CHE 5314 Chemical Process Industries
CHE 5413 Air Pollution Control
CHE 5933 Bio-refining: Principles, Processes and Products
ENR 2114 Water Sustainability: Practice and Technology
ENR 3201 Urban Hydrology and Water Management
ENR 3112 Water Resources Management
ENVS 2023 Climate Change
FOR 2006 Management of Natural Systems
FOR 4545 Biodiversity and Ecosystem Management
FOR 4625 Integrated Management of Insects and Fungi
FOR4656 Wildlife: Scale and Forest Landscapes
ESCI 4452 Environmental Impact Assessment

Social Sciences and Humanities Group

ANTH 2114 Human Systems of Exchange: Nature and Culture
ANTH 4114 Culture and Environment
ECON 3755 Environmental Economics
ENR 2004 Social and Cultural Systems
ENVS 4002 Stakeholder Approaches to Environmental Problem Solving
FOR 5983 International Forestry Studies
HIST 3925 Technology and Society*
HIST 5342 Environmental History of North America
HIST 5345 Natural Resources, Industrialization and the Environment in Atlantic Canada
PHIL 2206 Environmental Ethics
POLS 1603 Politics of Globalization
SOCI 2534 Technology and Social Change*
SOCI 3553 Sociology and the Environment
* Credit granted for only one of: SOCI2534, HIST3925

BACHELOR OF INTEGRATED STUDIES

Mailing Address:	Bachelor of Integrated Studies c/o UNB College of Extended Learning 6 Duffie Drive, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 458-7976
Fax:	(506) 453-3572
Email:	bis@unb.ca
Website:	http://www.unb.ca/cel/credit/bachelor-of-integrated-studies/index.html

General Information

The Bachelor of Integrated Studies (BIS), an innovative degree completion program, was developed in response to the needs of adult learners. BIS students will have some post-secondary educational experience (such as certificate or diploma programs, or partially completed degree programs); and may have achieved equivalent university study through a Prior Learning Assessment (PLA) of university-level learning gained through work, life and education experiences. The BIS is particularly designed for part-time study. Mid-career adults may consider this program for a variety of reasons including a change in professional direction, advancement within their career, or seeking a personal or professional challenge. To help adult learners achieve their specific personal, educational and professional goals, the program will integrate their university-level educational background and career and personal objectives with an approved plan of study.

Expected Outcomes

Although each individual program of study may include learning outcomes specific to that plan, student-learning outcomes that are general to the BIS degree program include:

- Communication skills: graduates will be able to listen, read, synthesize, draw conclusions and effectively communicate results in both oral and written form.
- Critical and analytical thinking: graduates will be able to absorb and analyze complex material from a variety of disciplinary perspectives.
- Problem solving: because of their increased ability to critically analyze the complexities of an issue or problem from multiple perspectives, graduates will have developed the ability to make discerning judgments and decisions.
- Intellectual and research skills: graduates will have acquired generalized intellectual and research skills, which will also develop the student's capacity for lifelong learning.
- Interdisciplinary leadership: graduates will be able to set a direction, create and maintain commitment to that direction, and face adaptive challenges. As well, graduates will have an interdisciplinary awareness of current social, political, and economic concerns, the leadership qualities required to assume the challenges of citizenship, and the capabilities to facilitate change.

This degree program is jointly coordinated and administered through a partnership between Renaissance College (the Faculty) and the College of Extended Learning (CEL). Renaissance College (RC), with its strength in interdisciplinary and leadership programs and with its emphasis on learning portfolios and outcomes-based learning, is responsible for the academic oversight of the BIS program (admissions, transfer credit review, curriculum changes, graduation and portfolio approvals). The College of Extended Learning, with its expertise in adult learning, distance education, workplace learning, and prior learning assessment provides the infrastructure and the administrative support for the program. The UNBF Faculties contribute expertise in the areas of the students' chosen Minor programs and in Prior Learning Assessments.

University/General Regulations

The General University Regulations covered in <u>Section B</u> of this Calendar will govern any point not covered by the General Regulations of the Bachelor of Integrated Studies. Questions concerning the application of regulations should be directed in writing to the Registrar.

Normally, applicants to the Bachelor of Integrated Studies program without a prior degree must meet the following requirements:

- Have acquired a minimum of 30 credit hours of transferable credit of post-secondary study. Transferable credit may also include credit awarded through a Prior Learning Assessment (PLA).
- Have been out of high school a minimum of seven (7) years.
- As a final step in the admission process, complete an interview with the Bachelor of Integrated Studies Coordinator to assess their suitability for the program.

Potential applicants with a degree should refer to existing regulations in the UNB Calendar regarding second degrees and should consult the BIS Coordinator.

To earn a Bachelor in Integrated Studies a student must complete a minimum 120 credit hours that include the following requirements:

1. **University Minor**: A required element of the BIS program is a University Minor or the equivalent. Specialization in a discipline or subject area through a minor complements the interdisciplinary nature of the BIS program. UNB Minors are administered and approved by UNB Faculties. Externally obtained minors must meet UNB guidelines for Minors and have an equivalent content and quality level to those offered by UNB. In cases where the student's particular interests and qualifications warrant a minor in Interdisciplinary studies, this can be approved by the Faculty of Renaissance College in consultation with the College of Extended Learning.

2. **Leadership Component:** To build program coherence and to explore interdisciplinary and integrated learning approaches each learner will normally complete a Certificate in Leadership studies (see Bachelor of Philosophy in Interdisciplinary Leadership - Certificate in Leadership Studies in the Undergraduate Calendar). By adding three additional leadership related courses through Renaissance College, students can obtain a Minor in Leadership Studies (see Bachelor of Philosophy in Interdisciplinary Leadership - Minor in Leadership Studies). This will not replace the requirements of the BIS minor.

3. **Individualized Plan of study:** Adult learners admitted to the BIS will meet with the BIS Coordinator to design a plan of study that builds upon their interests and previous academic study, and that meets the program requirements.

   Each individual plan of study includes a statement of objectives written by the learner, a list of courses previously taken and to be taken during the upcoming academic year, a summary of BIS program requirements, and a description of how each component will contribute to achieving the student's learning objectives. Each learner's plan of study must be approved by Renaissance College.

4. **Personal learning portfolio/Applied Leadership Project:** Students must successfully complete either RCLP 3030, the BIS learning portfolio course or RCLP 3031, Applied Leadership Project. BIS students are expected to take either RCLP 3030, or RCLP 3031 early in their program. Learners will continue to develop their Portfolio Project throughout their studies. Learners must submit their completed portfolio/project to the Faculty in the semester prior to their expected graduation for evaluation.

5. **Elective credits:** The balance of the BIS program is comprised of elective courses that students select based on individual goals and interests identified in their study plans.

6. Students must complete a minimum of 39 credit hours (one-third of the program) at the 3000 and/or 4000 level.

7. Students must maintain a minimum cumulative grade point average of 2.0

8. Normally students will complete a minimum of 45 credit hours of the program at UNB. The Registrar in consultation with Renaissance College and the College of Extended Learning may waive this provision.

9. Any course taken or transferred to satisfy any of the requirements for a BIS degree must be passed with a minimum grade of C. A maximum of twelve (12) credit hours from courses with a final grade D can transfer as elective credit only and must be from a field in which a grade of D is considered to be a passing grade.

   The standing RC BIS Committee (composed of one RC faculty member, the BIS Coordinator and the RC College Coordinator) will review and make recommendations to RC Dean or Council for approval of PLA, transfer credit, periodic plans of study and graduation.

BACHELOR OF NURSING

General Office:	McLaggan Hall, Room 106
Mailing Address:	Faculty of Nursing University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4642
Email:	nursing@unb.ca
Website:	http://www.unb.ca/fredericton/nursing/

FACULTY

Dean: Lorna Butler, BScN, MN, PhD
Associate Dean - Graduate Studies & Research: Sue O'Donnell, BN, MN, PhD
Assistant Dean UNB/Humber College: Kelly Scott-Storey, BN, MN, PhD
BN Program Director (Fredericton): Debra Amirault, BN, MN
Associate Dean (Moncton): Emily Read, BHKin, MSc, BScN, PhD

- Amirault, Debra, BN (UNB), MN (UNB), Sr Teaching Assoc - 1999
- Antworth Andrea, BN (UNB), MN (Athabasca), Sr. Instructor - 2003
- Aquino-Russell, Catherine, BScN (LU), MN (UofM), PhD (Curtin, Australia), Prof - Moncton - 2002
- Balcom , Sarah, BA (Dal), BScN (Dal), MN (UNB), PhD (UNB), Asst. Prof - 2018
- Batty, Mary-Lou, BN (UNB), BA (Dal), MN (UNB), PhD (UNB), Senior Teaching Assoc- 2010
- Bulman, Donna, BN (DAL), MAEd (SFX), PhD (U of Nottingham), Assoc Prof - 2008
- Burke, Dawn, BN (UNB), MN (Dal), Sr Teaching Assoc - 2010
- Busolo, David, BSc (U of Eastern Africa), MPH (Loma Linda), PhD (U of M), Asst Prof - 2017
- Butler, Lorna, BScN (Mt. St. Vincent), MN (Dal), PhD (U of T), Professor and Dean - 2018
- Day, Kelly, BN (UNB), MN (UNB), Sr Instructor - 2016
- Doiron-Maillet, Nancy, BN (UNB), MN (Dal), Sr Teaching Assoc - 1991
- Durepos, Pamela, BScN, MSc, PhD (McMaster), Asst Prof - 2020
- Fullarton, Becky, BN (UNB), MN (UNB), Sr. Instructor - 2017
- Gaudet, Bev, BN (UNB), MN (Athabasca), Sr Teaching Assoc - 2003
- Gillis, Mary-Lee, BN (UNB), MN (Athabasca), Instructor - Moncton - 2021
- Gordon, Renée, BScN (Lakehead), MSc Global Health (McMaster), Sr Instructor - 2017
- Hamilton, Sharon, BScN (SHU), MSc (Yale), Sr Teaching Assoc- 2011
- Hickey, Jason, BSc (Dal), MScN (McGill), PhD (Manchester), Assoc Prof - 2017
- Hodgins, Marilyn, BSN (UWO), MN (U of A), PhD (Alta), Assoc Prof - 1998
- Irek, Shyanne, BN (UNB), MN (Western), Instructor - Moncton - 2019
- Irving, Nicole, BN (UNB), MN (UNB), Sr Instructor - 2013
- Keough, Alicia, BN (UNB), MN (Athabasca), Sr Instructor - 2017
- O'Donnell, Sue, BN (UNB), MN (UNB), PhD (UNB), Assoc Prof - 2014
- Read, Emily, BHKin (Acadia), MSc (UWO), BScN (UWO), PhD (UWO), Assoc Prof -2016
- Rickards, Tracey, BN(UNB), MN(UNB), PhD(Dal), Assoc Prof-2011
- Seymour, Fran, BN (UNB), MN (UNB), Sr Teaching Assoc - 2007
- Scott-Storey, Kelly, BN (UNB), MN (UNB), PhD (UNB), Assoc Professor - 2011
- Taylor, Petrea, BN (UNB), MN (UNB), PhD (UNB), Asst Prof - Moncton - 2020
- Tobin, Heidi, BN (UNB), MN (UNB) - Sr Instructor - 2017
- Ursel, Karen, BN (U of M), MHSA (Dal), Sr Instructor Moncton- 2016
- VanSlyke, Stephen, BN (UNB), MN (UNB), Sr Teaching Assoc - 2003
- Webster, Jessica, BN (UNB), MN (UNB), Sr Teaching Assoc - 2007
- Williams, Claire, BN (UNB), MN (UNB), Instructor - Moncton - 2020
- Wilson, Haley, BSc, BN (UNB), Instructor - Moncton - 2021
- Wilson, Kathy, BN (UNB), MN (Dal), PhD (UNB), Assoc Prof - 1990

Mission Statement

Educating and preparing nurses for an evolving healthcare system grounded in the principles of primary health care, social justice and caring supported by evidence and research.

- Questioning, developing, applying and sharing nursing knowledge
- Creating a climate for the advancement of excellence in nursing practice

- Implementing a curriculum grounded in the principles of primary health care, social justice, and caring
- Engaging diverse communities as full participants in inquiry, caring and decision-making related to health.

The Faculty of Nursing contributes to enhancing people's health and the advancement of the profession and discipline of nursing.

General Information

The Faculty of Nursing was established in 1958 through the financial generosity of the W.K. Kellogg Foundation and the provincial government. It was the result of the recognized need for better education for professional nurses by this University and individuals and organizations in the health fields. This program has built a solid reputation across Canada and internationally over the years.

The Nurses' Association of New Brunswick established a Task Force which led in 1989 to the endorsement of the Baccalaureate degree in Nursing as the entry level to the profession by the year 2000. In December 1994, the responsibility for nursing education in NB was transferred to the universities and UNB admitted the first cohort of students in the fall of 1995. In fall of 2000, the Faculty of Nursing began a collaborative relationship to offer the baccalaureate program in nursing at the Humber Institute of Technology and Advanced Learning.

The Faculty of Nursing offers two programs leading to a baccalaureate degree. The four year BN degree program covers four years of general and professional education. This program is offered at the Fredericton and Saint John campuses. The Advanced Standing degree program (BNASP) is completed in six terms (Fall, Winter and Summer) over the course of two years, beginning in September of each year. BNASP is offered only at the Moncton site. On completion of either program, graduates are eligible to write the National Council Licensure Examination (NCLEX-RN). Those who are successful are eligible to apply for registration across Canada and in other countries by reciprocity.

Nursing students practice in a variety of clinical facilities and health agencies. Students may be expected to travel out of town for some clinical experiences. In some instances, accommodation will be required. Students may also be expected to complete clinical experiences during evenings, nights, and weekends to accommodate availability of clinical facilities and/or instructors. Students may need to participate in the preceptored clinical practicum during the winter break. Normally, summer session clinical courses are completed by the end of May/early June (four year BN program). However, depending on the availability of clinical facilities and/or instructors, these time frames may need to be extended. Students will be provided with notice of clinical scheduling as soon as it is feasible.

All BN and BNASP students must provide proof of required immunizations. Clinical agencies require that students be fully immunized in order to access facilities and may ask students at any time to provide proof of the following mandatory immunizations: Diphtheria, Pertussis, Tetanus, Polio, Measles, Mumps, Rubella and Varicella; appropriate Diphtheria, Tetanus and Pertussis boosters; and the series of Hepatitis B immunizations and titre status. Students also must have an initial 2-step Mantoux test for Tuberculosis. Further details are contained in the relevant Faculty policy.

Additionally, in order to participate in nursing clinical courses, students must have current CPR Certification Basic Life Support for Health Care Providers (Health Care Provider BLS-HCP). In order to access clinical agencies, students must submit a yearly Criminal Record check, including Vulnerable Sector check. In addition, some clinical agencies require students to have a Social Development Reference Check as described in the Family Services Act of New Brunswick, prior to the clinical practice experience.

Costs

Costs in addition to those listed in the financial information section, of this Calendar are: CPR Certification; Criminal Record check; Immunizations; books; photocopying; lab kits; equipment; uniforms; preparation for NCLEX examination and examination writing costs; professional nursing registration; professional meetings; travel costs to and from clinical practice areas; and room and board for off-campus and off-site placements/course requirements.

University Regulations

It is advisable to read carefully the University Wide-Academic Regulations in this Calendar, in particular the subsection titled Examinations, Standing and Promotion.

Any point not covered in the following regulations will be governed by the General University Regulations.

Transfer and mature students are particularly advised to consult the Admissions and University Regulations section of this Calendar. Transfer students and students applying for Nursing as a second undergraduate degree will take Nursing courses and in addition, those Arts and Science courses required by the Faculty if they have not already taken them. To be eligible for the four year degree program, transfer and mature students must have a minimum grade of 70% on each of the following Grade 12 academic high school courses (or the equivalent) with an overall average

of 75% on the four: Biology, Chemistry, English and either Pre-calculus 110 or Foundations of Mathematics 120 (prior to September 2013, Functions and Relations). If a higher level Math course in the Pre-Calculus stream is presented, the math courses with the highest grade will be considered. In addition to these high school courses, transfer applicants must have completed a minimum of 24 credit hours of university course work with an average of 3.0 (B or 70%) or higher. For transfer applicants who have completed more than 24 credit hours, the admission average will be calculated on the most recent 24 credit hours of course work. The grades for all courses taken within an academic term will be included in this calculation, even if this results in exceeding the 24 credit hour requirement. Mature applicants must have completed a minimum of 12 credit hours (or 4 courses) of university studies with an average of 3.0 (B or 70%). Preference may be given to those mature applicants who began and successfully completed this requirement within the year prior to the term for which admission is sought. Questions concerning admissions should be directed to the BN Program Director at the Fredericton campus.

Admission Policy on English Language Proficiency

The language of instruction within our program is English and prospective students whose native language is not English will be required to demonstrate competence in the English language prior to admission. Prospective students may prove English language proficiency in one of the following ways:

- Minimum TOEFL (paper based) score of 600
- Minimum TOEFL (IBT) score of 100
- Minimum IELTS score of 7.0
- Duolingo with a minimum score of 120
- Pearson Vu Test (PTE) with a minimum score of 68
- Cambridge English Assessment C1 Advanced with a minimum score of 190
- CAEL CE or CAEL online with a score of 80
- UNB Fredericton English Language Programme (ELP) Assessment score of 85 with no sub score less than 85.
- Equivalent results of a UNB approved standardized proficiency test.
- Complete four or more consecutive years of full-time education in English in a country where English is the principal language.

In all cases, the Faculty reserves the right to require further proof of language proficiency before permission will be granted to register in academic courses.

General Regulations

1. A student whose assessment grade point average (the May/April period; for definition, see Standing and Promotion Requirements in Section B of this Calendar) falls:
   a. below 2.0 but above 1.6 will be placed on academic probation; if in any subsequent period the grade point average falls below 2.0 the student will be required to withdraw from the program.
   b. below 1.7 will, subject to review by the Nursing Faculty, be required to withdraw from the program.
2. A student who twice fails to achieve at least a "C" or "CR" grade in any Nursing course will be required to withdraw from the Nursing program.
3. A student must receive at least a "C" or clinical "CR"
   a. in each Nursing course before proceeding to ensuing Nursing courses and
   b. in all additional required non-nursing courses before proceeding to the next year of Nursing courses.
   c. in nursing electives
4. A "D" grade is accepted only in non-nursing open electives (a nursing elective taken as an open elective requires a "C" grade for credit).
5. Normally, students must complete all courses in a given year before proceeding to the next year of the program.
6. A student repeating a Nursing course may, at the discretion of the Nursing Faculty, also be required to repeat and pass the Nursing course that immediately preceded it.
   a. Four year BN degree students must complete the program within 6 years of enrolment in the Faculty of Nursing.
   b. Advanced Standing Degree Program students must complete the program within 4 years of enrolment in the first term of the program.
7. Students who have been out of regularly sequenced nursing courses for less than one year, for any reason, are required to notify the campus BN Director by email of their intentions for future studies by April 30. This will facilitate planning for the upcoming academic year. Failure to notify the BN Director of the intention to return to the program by this deadline may result in lack of availability of a clinical placement in a required clinical course(s).
8. Students enrolled in the four year BN degree program must complete 94 credit hours in Nursing, 26 required credit hours in other faculties and 9 credit hours of open electives. Students enrolled in the Advanced Standing Degree Program must complete 83 credit hours in Nursing and 3 credit hours in Biology.

9. All students in the four year and BN program are required to complete one online Student Assessment of Abilities Year (SAAY) survey at the end of each year in the program. The students of the BN-Advanced Standing Program are required to complete the online Student Assessment of Abilities Year (SAAY) survey at the completion of terms two, four and six. These surveys are administered electronically and are linked to a particular course at the end of each year in the program. All students must complete the SAAY survey in order to receive credit for the related course.

Curriculum for BN Students Four Year Degree Program (BN)

YEAR I
Term 1: NURS 1012 (4 ch), NURS 1014 (2 ch), NURS 1306 (4 ch), NURS 1324 (3 ch), BIOL 1711 (4 ch), Writing elective (English or Writing designated Course) (3 ch).
Term 2: NURS 1225 (3 ch), NURS 1305 (4 ch), NURS 1235 (3 ch), BIOL 1782 (4 ch), Restricted Psychology elective (3 ch).

YEAR II
Term 1: NURS 2177 (3 ch), NURS 2135 (3 ch), NURS 2145 (3 ch), NURS 2155 (4 ch), BIOL 2501 (3 ch).
Term 2: NURS 2132 (3 ch), NURS 2187 (3 ch), BIOL 2513 (3 ch), STAT 2263 (3 ch), Open elective (3 ch).
Summer Session: NURS 2063 (3 ch).

YEAR III
Term 1: NURS 3065 (4 ch), NURS 3068 (5 ch), NURS 3092 (3 ch), BIOL 2251 (3 ch).
Term 2: NURS 3072 (3 ch), NURS 3074 (5 ch), NURS 3082 (3 ch), Open elective (3 ch).

YEAR IV
Term 1: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4125 (5 ch), open or Nursing elective (3 ch).
Term 2: NURS 4153 (12 ch), NURS 4185 (3 ch).

Curriculum for BN Students in the Advanced Standing Degree (BN-ASP)

The Advanced Standing degree Program in Nursing is intended for applicants with a university degree (or 60 credit hours or more of courses) who wish to earn a Baccalaureate Degree in Nursing.
To be eligible for the Advanced Standing BN program, applicants must have a minimum grade of 70% on each of the following Grade 12 academic high school courses (or the equivalent) with an overall average of 75% on the four: Biology 120, Chemistry 122, English 122 and Pre-Calculus 110 or Foundations of Mathematics 120 (prior to September 2016, Functions and Relations). If a higher level Math course in the Pre-Calculus stream is presented, the math course with the highest grade will be considered. In addition to these high school courses an applicant must have completed a minimum of 60 credit hours of university courses with an admission average of 3.0 ("B" or 70% average) or higher. For applicants who have completed more than 60 credit hours, the admission average will be calculated on the most recent 60 credit hours of course work. The grades for all courses taken within an academic term will be included in this calculation, even if this results in exceeding the 60 credit hour requirement. Students must receive a minimum "C" grade or the equivalent in each prerequisite course and maintain a minimum 3.0 GPA ("B" average or 70%) in their prerequisite courses in order to be admitted into the Advanced Standing BN Program.

Program *Prerequisites* Are:

1. BIOL 1711: Human Anatomy I (4 ch) (BIOL 1709 online course option through UNB College of Extended Learning)
2. BIOL 2251 or equivalent: Microbiology (3 ch)
3. STAT 2263 or equivalent: (3 ch)
4. BIOL 2501: Pathophysiology I (3 ch) (BIOL 2509 online course option through UNB College of Extended Learning)
5. A restricted elective in either the Humanities or Social Sciences (3 ch)

NOTE: Taken from UNB Undergraduate Calendar

Humanities	Social Sciences
Classics	Anthropology
English	Archaeology
History	Economics
Media Arts and Cultures	Political Science
Philosophy	Psychology
Comparative Cultural Studies	Sociology

For additional information concerning the *Prerequisites* for the BN-ASP, contact the Undergraduate Program Director, Fredericton campus.

September 2021 Start

YEAR I
Term 1: NURS 1121 (3 ch), NURS 1135 (3 ch), NURS 1136 (4 ch), NURS 1142 (3 ch).
Term 2: NURS 2133 (4 ch), NURS 3065 (4 ch), NURS 3068 (5 ch), NURS 1131 (3 ch).
Term 3: NURS 2171 (3 ch), NURS 2145 (3 ch), NURS 2172 (6 ch), BIOL 2513 (3 ch).

YEAR II
Term 4: NURS 3072 (3 ch), NURS 3073 (5 ch), NURS 3082 (3 ch), NURS 3092 (3 ch).

Term 5: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4124 (6 ch).
Term 6: NURS 4153 (12 ch), NURS 4185 (3 ch).
September 2022 Start
YEAR I
Term 1: NURS 1121 (3 ch), NURS 1135 (3 ch), NURS 1136 (4 ch), NURS 1142 (3 ch).
Term 2: NURS 2133 (4 ch), NURS 3065 (4 ch), NURS 3068 (5 ch), NURS 1131 (3 ch).
Term 3: NURS 2171 (3 ch), NURS 2145 (3 ch), NURS 2172 (3 ch), NURS 2175 (3 ch), BIOL 2513 (3 ch).
YEAR II
Term 4: NURS 3072 (3 ch), NURS 3073 (5 ch), NURS 3082 (3 ch), NURS 3092 (3 ch).
Term 5: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4124 (6 ch).
Term 6: NURS 4153 (12 ch), NURS 4185 (3 ch)
Credit Hours Requirements for Nursing Programs
Four Year BN Degree Program Minimum 129 ch
Advanced Standing Degree Program Minimum 86 ch
Nursing Electives
Nursing electives may not be available in each academic year.
NURS 4234 Independent Study (3 ch)

LPN to BN Pathway

The pathway involves a set of six courses that allows Licenced Practical Nurses (LPN) to transition into the third year of the current four year Bachelor of Nursing (BN) program. The LPN to BN pathway provides a way for LPNs who successfully complete their licensure, and meet admission requirements to advance their nursing education resulting in a Baccalaureate of Nursing degree. Students can complete the Pathway Program in a single term (winter) or over two terms (3 courses each term, fall and winter). The option for in class study for three of the courses in the Pathway Program is available. Once students complete the pathway program, they can apply to transfer into the Fall term of third year of the BN program and will complete third and fourth year of the undergraduate four- year nursing program.

2 Term Option
Fall
PSYC 1013 or 1023 (3 ch), STAT 2263 (3 ch), Biol 2759 (3 ch) (Physiology and Pathophysiology for Licenced Practical Nurses)
Winter
NURS 2132 (3 ch) (Phamacotherapeutics), NURS 2217 (3 ch) (Professional Nursing Practice), NURS 2218 (3 ch) (Enhanced Decision Making in Clinical Practice)
1 Term Option
Winter
PSYC 1003 or 1013 (3 ch), STAT 2263, (3 ch) BIOL 2759 (3 ch), NURS 2132 (3 ch), NURS 2217 (3 ch), NURS 2218 (3 ch)
Upon completion of the pathway, students apply to transfer to year 3 of the 4- year BN program.

YEAR III
Term 1: NURS 3065 (4 ch), NURS 3068 (5 ch), NURS 3092 (3 ch), BIOL 2251 (3 ch).
Term 2: NURS 3072 (3 ch), NURS 3074 (5 ch), NURS 3082 (3 ch).
YEAR IV
Term 1: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4125 (5 ch), open elective (3 ch).
Term 2: NURS 4153 (12 ch), NURS 4185 (3 ch).

BACHELOR OF PHILOSOPHY IN INTERDISCIPLINARY LEADERSHIP

Renaissance College

General Office:	811 Charlotte Street
Mailing Address:	Renaissance College University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 447-3092
Fax:	(506) 447-3224
Email:	rc@unb.ca
Website:	http://www.unb.ca/renaissance/

FACULTY
Dean: Carol Nemeroff, BA (McGill), MA, PhD (UPennsylvania)

- Mira Bachvarova, BA (Trent), MA (Carleton), PhD (Queen's)
- Thomas Mengel, Dipl Paed, Lic Theol (Bamberg), MA (Toronto), Dipl Inf (Hagen); Dr Theol (Bamberg)
- John Valk, BA (Calvin), MA (St. Michaels), PhD (Toronto)

General Information
The Renaissance College Undergraduate Interdisciplinary Leadership Program is a 126 credit hour program. Approximately sixty percent of the program is held at Renaissance College in its classes, seminars, forums, and internships, with the remaining forty percent offered through other UNB courses. Graduates of the Bachelor of Philosophy in Interdisciplinary Leadership will gain knowledge and experience in leadership, depth in one discipline equivalent to at least a UNB minor, and an interdisciplinary understanding to issues.

Program Features

- An understanding of leadership in different situations and cultures
- A breadth in interdisciplinary knowledge in the social sciences, natural sciences, and humanities
- A wide selection of elective courses providing students with the opportunity for depth in a disciplinary or professional area
- An emphasis on experiential forms of education to enhance learning
- Activities to enhance the student's physical, emotional, spiritual, intellectual, and social aspects of personal well-being
- An intentional approach to meeting designated knowledge-based and experiential learning outcomes
- A Canadian internship designed to provide practical work and leadership experience
- An international internship designed to foster multiple cross-cultural perspectives
- The program can be completed following a four year option or intensive summer internships can reduce the calendar length of the eight semester B. Phil. degree program to three academic years plus two summers.
- Community-based resource people share their special expertise and will help to situate learning in a practical context

General Regulations
Any point not covered by the General Regulations of Renaissance College will be governed by the General University Regulations stated in Section B of the Undergraduate Calendar. Questions concerning the application of university regulations should be directed to the Registrar in writing.

To earn a Bachelor of Philosophy degree (in Interdisciplinary Leadership) a student must demonstrate, in a summative portfolio, growth and competence in each of the program's designated learning outcomes. Within the context of Interdisciplinary Leadership studies, students are to achieve growth and competency in the following learning outcomes: Knowing Oneself and Others, Effective Citizenship, Problem Solving, Multi-Literacy, Personal Well-Being, and Social Interaction. The summative portfolio is completed in the final year of study.

1. The Renaissance College degree program is designated as a limited enrolment program and meeting the minimum requirements does not guarantee admission. Normally, not more than thirty students will be admitted in any academic year.
2. The maximum time period between the first registration in the Renaissance College program and the completion of the degree is seven (7) years.
3. Few *prerequisites* are specified; it is expected that students will ordinarily take courses in the normal sequence and exceptions will require the permission of the Dean and instructor of the course.
4. In exceptional circumstances, and with the approval of the Dean, alternative arrangements may be made in lieu of the Canadian internship or international internship to meet degree requirements.
5. Where the educational objectives of a course will be best served by limiting enrolment in the course, the Dean may approve a limited enrolment for the course.
6. In course offerings of other Faculties/Departments, students must meet the prerequisite and other requirements of that Faculty/Department.

7. Each student's program of study must be approved by the College advisor.
8. A minimum grade of C will be required for all courses that are used to meet the core requirements of the program and courses judged to be 'equivalent' to RCLP courses as part of credit transfer.
9. Students must be in good academic standing (min. 2.0 assessment GPA) in order to register in RCLP 2023 Canadian Internship. Failure to meet preparatory course requirements could lead to disqualification from participation in the Canadian internship. Any costs incurred by the student up to the point of disqualification are the sole responsibility of the student. A student who fails to qualify will normally be expected to take RCLP 2023 the following year.
10. In order for students to register in RCLP 3046, students must a) achieve a minimum grade of B (3.0) in RCLP 2023, and b) achieve a term GPA of 2.7 in the fall term preceding the internship or a minimum cumulative GPA of 2.7. Failure to meet preparatory course requirements could lead to disqualification from participation in the international internship. Any costs incurred by the student up to the point of disqualification are the sole responsibility of the student. A student who fails to qualify will normally, be expected to take RCLP 3046 the following year.
11. RCLP 2051 Research Paradigms and Methods is a core component of the BPhil degree, however, students may take a Research Methods course in their minor, in another UNB faculty, or outside of UNB. This substitution must be done in consultation with the College Coordinator.

Curriculum
Core Courses
RCLP 1001 Leadership Foundations 3 ch
RCLP 1011 Worldviews, Religions and Cultures 3 ch
RCLP 1020 Canadian Internship Preparation 0 ch
RCLP 1021 Concepts of Enhancing Personal Well-Being 3 ch
RCLP 1052 Quantitative Approaches to Problem-Solving 3 ch
RCLP 1062 Citizenship and Community 3 ch
RCLP 1111 Introductory Leadership Forum 9 ch
RCLP 2001 Practicing Leadership in Community Projects 3 ch
RCLP 2014 Democracy and Public Policy in Canada 3 ch
RCLP 2023 Canadian Internship 12 ch
RCLP 2046 International Internship Preparation 0 ch
RCLP 2051 Research Paradigms and Methods 3 ch
RCLP 3002 Leadership in Cross-Cultural Contexts 3 ch
RCLP 3015 Democracy and Global Policy 3 ch
RCLP 3046 International Internship 12 ch
RCLP 4002 Leadership for Social Innovation 3 ch
RCLP 4028 Community Problem-Solving and Research Project 6 ch
RCLP 4043 Interdisciplinary Leadership Seminar 3ch
RCLP 4045 Summative Learning Portfolio 3 ch
Total credit hours of core courses is 78 ch

Electives
Electives shall constitute a minimum 48 credit hours, with at least 24 ch assigned to a concentration equivalent to a UNB Minor Program and at least 9 ch assigned to RCLP electives.
Within the electives, at least 3 ch are assigned to a science course. This requirement can be fulfilled by taking either RC 2042 Science and Society, or a science course in another faculty.

Minor in Leadership Studies
The Renaissance College Minor in Leadership Studies is an interdisciplinary program offered to students registered in other degree programs at UNB. The Minor consists of 8 RCLP courses (24 ch) as outlined below and a minimum grade of C is required for all courses. Students are advised that in order to complete the minor they may need to take more than the usual number of credit hours required by their degree program. Students should check with their faculty advisor and the Renaissance College, College Co-ordinator.

Leadership Studies Minor Required Courses
RCLP 1001 Leadership Foundation 3 ch
At least two of:
RCLP 1011 Worldviews, Religions and Cultures 3 ch
RCLP 1062 Citizenship and Community 3 ch
RCLP 2001 Practicing Leadership in Community Projects 3 ch
At least 9 ch at the 3000 or 4000 level.
Normally RCLP 1001 is taken in the first year of study. With the approval of the Renaissance College College Coordinator up to 6 ch of courses from other faculties with relevant leadership content may be counted toward the minor.

Certificate in Leadership Studies
The Certificate in Leadership Studies (CLS) is designed t develop the capacity of current UNB students and professionals to exercise effective leadership in their professional, personal, and civic lives. In addition to foundational leadership theory, students will learn key interpersonal and intrapersonal leadership skiills including how to work in teams to solve problems. Students will develop their ability to use concepts of self-awareness, engaged citizenship in their work and personal lives, and

grow a range of communication skills. Students enrolled in the Certificate program will bring this knowledge and skill together to exercise leadership in a variety of contexts.

The Certificate in Leadership Studies requires the following 15 ch of RCLP courses, including :

RCLP 1001 Leadership Foundations 1001 3 ch
At least one of the following:
RCLP 1011 Worldviews, Religions, and Cultures 3 ch
RCLP 1062 Citizenship and Community 3 ch
RCLP 2001 Practicing Leadership in Common Projects 3 ch
At least 3 ch at the 3000 or 4000 level

Normally, RCLP 1001 is taken as the first course towards completion of the certificate. With the approval of the college co-ordinator, up to 3 ch of courses from other faculties with relevant leadership content may be counted toward the Certificate.

A minimum grade of C is required in all courses.

To be considered for admission, applicants must satisfy the minimum admission requirements defined for this certificate.* Applicants 21 years of age and over by the session for which acceptance is sought, may be considered for admission as a mture applicant. All admissions are subject to faculty approval.

Currently enrolled UNB students completing the Certificate concurrently with their undergraduate degree program are advised that in order to complete the certificate they may need to take more than the usual number of credit hours toward required toward their degree program. Students should check with their faculty advisor as well as the Renaissance College, College Coordinator.

*Minimum admission requirements for the certificate are:

- English 122/Français 10411 (min. grade of 60%)
- Four electives - Group 1
- One elective - Group 1, 2, or 3.

BACHELOR OF RECREATION AND SPORTS STUDIES

FACULTY OF KINESIOLOGY

General Office:	Kinesiology Building
Mailing Address:	Faculty of Kinesiology University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4575
Fax:	(506) 453-3511
Email:	kin@unb.ca
Website:	http://www.unb.ca/fredericton/kinesiology/

FACULTY

Dean: Wayne Albert, BSc, MA, PhD
Assistant Dean (Undergraduate Programs): Charlene Shannon-McCallum, BBA, B of Recr Mgmt, MA, PhD
Assistant Dean (Graduate Programs and Research): Jonathon Edwards, BSM, MA, PhD

- Albert, Wayne, BSc (Ottawa), MA (UWO), PhD (Qu), Prof and Dean - 1999
- Barclay, Katherine, BSc (UNB), MSc (Waterloo), PhD (Guelph), Teaching Prof (Joint Biology, Nursing) - 2001
- Bouchard, Danielle, BPE (Sherbrooke), MSc (Quebec), PhD (UdeM), Assoc Prof - 2015
- Byers, Terri, BPE (Acadia), MA, PhD (DeMontfort), Assoc Prof - 2014
- Chester, Victoria, BScHK (Guelph), MA (Laur), PhD (UNB), Prof - 2002
- Dombrowski, Stephan, BA (Essex), MSc (Sussex), PhD, CPsychol (Aberdeen), Asst Prof - 2018
- Duquette, Greg, BKin (McM), MA (CMU), Teaching Prof – 2008
- Edwards, Jonathon, BSM (Brock), MA, PhD (Alberta), Assoc Prof - 2012
- Hebert, Jeffrey, BA (Denver), DC (Palmer College of Chiropractic), PhD (Utah), Prof and Chiropractic Chair – 2017
- Kuruganti, Usha, BSceE, MScEE, PhD (UNB), Prof - 2004
- Mason, Fred, BA, BPE (MUN), MA (Ottawa), PhD (UWO), Assoc Prof - 2006
- McGarry, Timothy, BSc (Liv), MSc (Brad), MPE, PhD (UBC) Assoc Prof - 2000
- McGibbon, Chris, BSc, MSc, PhD (UNB), Prof - 2004
- McKenna, Mary, BSc (McG), MSc (Cornell), PhD (Nottingham), Prof - 1993
- Noble, Jeremy, BSc, MSc, PhD (Waterloo), Assoc Teaching Prof - 2014
- Oncescu, Jacquelyn, BRM, MR (Acadia), PhD (Ottawa), Asst Prof - 2018
- Scott, David, BA, PGCE (Ulster), MA, MA, PhD (Vic B.C.), Assoc Prof - 1997
- Seaman, Kenneth, BSc (Dal), MSc, PhD (UNB) – Teaching Prof - 2011
- Sénéchal, Martin, BSc, MSc, PhD (Sherbrooke), Asst Prof - 2015
- Shannon-McCallum, Charlene, BBA, B of Recr Mgmt (Acadia), MA, PhD (Waterloo), Prof - 2002
- Tymowski-Gionet, Gabriela, BA, BEd, MA (UWO), PhD (Gloucestershire), Assoc Prof – 1999

General Information

The Faculty of Kinesiology offers two undergraduate degree programs: Bachelor of Recreation and Sport Studies (BRSS) and Bachelor of Science in Kinesiology (BScKin). The four year BRSS program provides a solid foundation in theories and applications in the social-psychological aspects of recreation, sport, physical activity and leisure. Students may choose courses in the faculty of with a focus in Management, Education Preparation, and Wellness. Students in the program develop competency in communication, critical thinking, problem solving, professional conduct and numeracy, as well as, comprehensive and applicable knowledge of recreation, sport, physical activity, leisure and healthy living. The curriculum is designed to prepare students for a variety of vocational careers and/or further study at the graduate level.

The BRSS and the BScKin degree programs will prepare students interested in becoming elementary or secondary physical education teachers and coaches in school systems. Students who are interested in the Arts and Humanities as a teachable subject, should select the BRSS degree program, while students who are interested in the Sciences as a teachable subject, should select the BScKin degree program.

High School applicants or first-year students interested in the BEd program at UNB should refer to the Faculty of Education Admission Advantage program in either the Admissions section of this calendar (Item J) or the Bachelor of Education section under Fredericton Degree Programs.

University Regulations

Any point not covered in the following regulations will be governed by the General University Regulations as stated in this Calendar. Questions concerning the application of regulations should be directed to the Registrar in writing.

Conditions Regarding Admission to the BRSS Program

All admissions are on a competitive basis; satisfaction of minimum requirements does not guarantee admission. Normally, no more than 100 students will be admitted to first year in the Faculty of Kinesiology in any academic year.

Transfer Students

1. Normally, a minimum session grade point average of 3.0 is required for a student to be considered for transfer into one of the Faculty's programs.
2. Normally, a student will not be allowed to transfer into the Faculty mid-way through the academic year.
3. In addition to scholastic record, a transfer applicant's record of participation and interest in the "Kinesiology", "Recreation", and "Sport Science" field is also considered for admission.
4. Students presently registered in the Faculty will continue to be governed by the regulations in effect when they first registered. Students who were formerly in the Faculty and apply for re-admission, if accepted, will be governed by the regulations in effect at the time of their re-admission.

Time Limitation

The maximum time period permitted between the first registration in the BRSS degree program and the completion of the BRSS degree shall normally be eight (8) years. Normally, BRSS students who are re-admitted within this time frame must complete the degree requirements in effect at the last re-admission.

BRSS as a Second Degree

In addition to the University's regulations for a second undergraduate bachelor's degree as specified in the UNB Undergraduate Calendar, the Faculty of Kinesiology requires that any student accepted into the BRSS degree program as a second undergraduate bachelor's degree be required to: (a) Complete at least (30) credit hours of courses, and (b) Complete the requirements of the BRSS degree.

General Regulations
Grade Point Averages

1. The method of calculating grade point averages is explained in the Calculation of Grade Point Averages, section H, of this Calendar.
2. To earn a BRSS degree, a student must have successfully completed 121 ch of approved courses.
3. Students should refer to the Standing and Promotion Requirements, section I, Calendar for regulations regarding academic probation and withdrawal.

Policy on Grades

BRSS students must obtain a grade of "C" or better in all required core courses.
NOTE: KIN 1001 is considered to be *Prerequisite* or *Co-requisite* to all other KIN and RSS courses. Students receiving a final grade of "D" in KIN 1001 may repeat KIN 1001 as a *Co-requisites* to other second year KIN and RSS courses.

Repeating Courses

1. Regulations pertaining to repeating courses can be found in the Repeating Courses Section of this Calendar.
2. Any required courses not successfully completed during a given year must be attempted no later than the next academic year, except by special permission of their academic advisor.

Summer Term Courses

BRSS students who wish to take Summer Term courses that are to be credited towards their degree should first consult with their Academic Advisor.

Practicum and Directed Studies

1. Normally, students may elect a maximum of six (6) ch from practicum courses, i.e. RSS 3911 (1), RSS 3912 (2), RSS 3913 (3), RSS 3914 (3), RSS 4910 (6).
2. Normally, students may elect a maximum of six (6) ch from directed study courses, i.e., RSS 4093 (3), RSS 4094 (3), RSS 4800 (6).

Approval of Elective Courses

Advice concerning elective courses will be provided by members of the Faculty. All elective courses require approval of the Faculty.

Normal Workload

The maximum student workload is considered to be 20 ch per term, or 40 ch per year (not including Summer Term). Permission from their academic advisor is required to exceed 20 ch per term or 40 ch in any given academic year.

BRSS Year Designation Based on Credit Hours

For the purposes of online registration and administrative operations, BRSS students shall be considered as in:

1. Second year after the student has successfully completed 30 ch toward their BRSS.
2. Third year after the student has successfully completed 60 ch toward their BRSS.
3. Fourth year after the student has successfully completed 90 ch towards their BRSS.

Curriculum
General Notes

1. It is the student's responsibility to complete the degree program curriculum for the year in which they enrol.
2. The minimum credit hour total to graduate is 121 ch.
3. Students must complete at least 48 ch of 3000, 4000 level courses in order to graduate.

A. CORE PROGRAM (total 49 ch)

Students in the BRSS degree program are required to attend a two-day conference (or equivalent) sponsored by a recognized professional or academic organization prior to enrolling in RSS 4092, Senior Integrative Course and graduation. Written approval of the conference must be obtained through the Faculty prior to attendance. A written post-conference reflection report and session moderator attendance sheet must be submitted.

REQUIRED COURSES
Year 1 (31 ch)

KIN 1001 Introduction to Kinesiology 4 ch
KIN 2032 Introduction to Sport and Leisure Psychology 3 ch
1000 level Psychology /Sociology/Philosophy 3 ch
ENGL 1144 or ENGL 1145 3 ch
RSS 1042 History of Sport and Recreation 3 ch
RSS 1081 Health and Wellness 3 ch
RSS 1213 Leisure, Recreation and Sport Concepts 3 ch
RSS 2011 Management of Sport, Recreation and Wellness Organizations 3 ch
RSS/KIN or NON-RSS/KIN electives 6 ch

Year 2 (30 ch)

RSS 2023 Sociology of Sport, Physical Activity & Leisure 3 ch
RSS 2032 Recreation and Sport Programs and Events 3 ch
RSS 2061 Recreation and Sports Delivery Systems 3 ch
RSS 2223 Community Development 3 ch

STAT 2263 Statistics for Non-Science Majors or equivalent 3 ch
RSS/KIN or NON-RSS/KIN electives 15 ch

Years 3 & 4 (60 ch)

RSS 3001 Assessment and Evaluation in Recreation and Sport 3 ch
KIN 3093 Ethics and Kinesiology 3 ch
RSS 4092 Senior Integrative Course 3 ch
NON-RSS/KIN electives 24 ch (Optional Minor)
RSS or KIN Electives 27 ch

Honours Program: BRSS

1. The Honours program provides students with the opportunity to undertake academic research and be recognized as one of the Faculty's top students. Upon successful completion of the program, "Honours" is printed on the student's official academic transcript. See academic advisor for application procedures.
2. Application requirements include: minimum CGPA of 3.7, must be in one's final year of study, must identify a faculty member willing to serve as one's Honours Research Project supervisor.
3. Once accepted into the program, students must: outline the required deliverables and expectations of the Honours project which will be approved by the Honours supervisor before being submitted to the Assistant Dean of the Undergraduate Program no later than Oct 15th. This outline (one or two pages) briefly describes: i) the nature of the study being conducted, ii) timelines, iii) deliverables and expectations. This outline serves as a course contract between the student and the supervisor.
4. To graduate with a BRSS Honours, students must meet the following requirements: maintain a minimum CGPA of 3.5 throughout one's undergraduate degree; successfully complete RSS 4900: Honours Research Project.

Minor in Recreation and Sports Studies

The Minor in Recreation and Sports Studies is designed for students from outside the Faculty of Kinesiology interested in a coherent package of Recreation and Sports Studies courses. Students interested in the minor, must apply through the Undergraduate Degree Program Office, Faculty of Kinesiology. Enrolment is limited.

The Minor will consist of 24 credit hours of approved Recreation and Sports Studies courses. Students enrolled in the Minor will be required to take 12 ch of introductory courses and 12 ch of 3000 & 4000 level courses chosen in consultation, and in advance, with the Faculty of Kinesiology. A grade of C or better is required in each course used towards the Minor.

BACHELOR OF SCIENCE

FACULTY OF SCIENCE

General Office:	I.U.C - Physics & Administration Building, Room 109
Mailing Address:	Faculty of Science University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4586
Fax:	(506) 453-3570
Email:	science@unb.ca
Website:	http://www.unb.ca/fredericton/science
Dean:	Gary Saunders, BSc, MSc, PhD
Associate Dean:	Janice Lawrence. BSc, MSc
Assistant Dean:	Ben Newling, BSc, PhD
Assistant Dean:	Dave Keighley, BSc, PhD
Science Student Services:	Angela Jeffries Regier, Co-ordinator

General Information

The first year curriculum is common to all students entering the Faculty. Commencing in second year students must select one of the available options. Some options lead to specialization in a single subject area, while interdepartmental options involve specialization in two subject areas. Majors and Honours programs are available in these options. A Pass degree program is also available in Physics. In addition, co-operative programs are available that enable students to combine academic studies with work terms in university, industry or government laboratories. The General Science Degree option offers a broader exposure to more sciences and the program can be customized to meet the interest and academic development of the students. Honours is not available in General Science but students achieving a high academic performance are awarded Distinction upon graduation.

At the time of registration all students entering the Faculty of Science will be advised by members of the Faculty regarding selection of courses to meet the program requirements. It should be noted that as students register for the second, third and fourth years, approval of the courses and programs should be obtained from the program advisors for the Departments concerned or from the Dean's office when they are not available.

Students are strongly recommended to read the University-wide Regulations, Section III of this Calendar, and in particular the subsection headed Grading and Classification. Any point not covered in the following regulations will be governed by the General University Regulations.

General Regulations

Students should note that in the Faculty of Science the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.

Valid WHMIS (Workplace Hazardous Materials Information System) certification is required for all students who wish to take Chemistry laboratory courses. Information regarding WHMIS training will be provided during the first week of classes.

Major, Honours and Minor Programs

Major and Honours Programs

Major and Honours programs are offered for specialization and enriched training, respectively, in various subject areas. Upon the successful completion of the First Year, Science students will declare their Majors in one of the Science options or one of the Interdepartmental programs. Students must consult their respective program advisors to develop their programs and obtain pre-approval for the selection of courses. Such course requirements and choices are listed under each of the options and interdepartmental programs in the subsequent sections.

A minimum CGPA of 3.0 is required for admission to and retention in an Honours program in Science. For individuals who wish to enrol in Honours programs, they must contact the corresponding department Chairs or their delegates to learn about the application procedures and requirements that are discipline specific. In order to graduate with Honours recognition, the graduate must maintain a minimum CGPA of 3.0. Additional discipline specific requirements must also be met. A student who has completed the courses of an Honours program but did not achieve the minimum CGPA requirement will be awarded a Major degree. An Honours graduate with a CGPA of 3.7 and above will be awarded First Class Honours provided that the discipline specific requirements are also met.

Minor Programs

Minor programs are offered to broaden a student's educational background and complement a Major or Honours program. Science Minors are offered in the disciplines of Biology, Chemistry, Economics, Earth Sciences, Physics, Psychology, Mathematics and Statistics. The Minors follow the University guidelines outlined in Section V in the University-wide Academic Regulations of the Calendar and consist of a sequential and coherent grouping of courses totalling at least 24 credit hours (with a grade of C or better) as approved by the department offering the Minor. Courses that are required in the student's degree program may not normally be counted toward the Minor.

Co-Operative Education Program

The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through its constituent departments/programs, operates a Co-operative education program (Co-op Program) based on established partnerships with selected employers.

A Co-op team, reporting to the Dean of Science, liaises with the academic advisor in each department/program to ensure alignment between students' academic and professional experience objectives. The effectiveness of the Co-op Program in delivering the planned professional internship experience is closely monitored and assessed by the Co-op Office through interactions with the students, company personnel, and UNB.

Co-operative education is available within all Science Programs including BAS and BA/BSc. Work terms may be 4, 8, 12 or 16 months in duration and are generally interspersed with academic study terms. Specifics can be obtained from the Engineering and Science Co-op Program Office. Prior to applying for Co-op jobs, students will be oriented to the process and will be assisted in preparing resumes and for job interviews.

Co-op Program Eligibility and Approval

1. A student must be registered as a full-time student in an undergraduate science, BAS or BA/BSc degree program at UNB (a student retains their full-time student status while being on a Co-op work term).
2. A student must be in good academic standing. However,
   - A student who has completed the first term of their studies in the Faculty of Science at UNB must have a Cumulative GPA of at least 2.7.
   - A student in terms 2 to 4 of their studies in the Faculty of Science at UNB must have a most recent Assessment GPA of at least 2.7.
3. A detailed degree-continuation plan, usually completed after consultation with an academic advisor, must be submitted by the student to the Co-op Office. The Co-op Office will include this plan when informing the Science Co-op team that the student is planning to go on Co-op.
4. Eligibility and suitability to enrol in the Co-op Program is then assessed by the Science Co-op team and the student's department/program. An approval is then forwarded to the Co-op Office.

Co-op Work Term Requirements

1. A work term usually commences at the beginning of January, May, or September.
2. A student must have completed at least two terms of full-time science-related courses at UNB prior to their first Co-op work term.
3. A student who has completed the first year of full-time science-related courses at UNB will be limited to an initial summer work term of 4 months.
4. A student who has completed two years of full-time science-related courses is eligible for work terms of 4 to 16 months, with departmental approval.
5. A student must inform the academic advisor and the Co-op Office in writing if they would like to extend a Co-op work term. The decision on the approval of the extension will be made by the Co-op Office in consultation with the Science Co-op team.
6. A fee is charged for each 4-month portion of a work term.
7. While on a work term, a student is limited to a maximum of one academic course per academic term. The academic course and the student's work term responsibilities cannot conflict with each other.
8. After the student's final work term, the student must return to UNB for at least one term of full-time science-related courses to complete their degree requirements.
9. A student is limited to a maximum of 6 work terms totalling no more than 24 months.
10. The student's evaluation by the employer will be taken into consideration by the final assessment on whether or not a work term has been successful will be the responsibility of the Faculty of Science, based on the student's completion of a work-term report.

Where available, successful completion will also be recorded as credit (CR) for a science-department co-op course.
11. Co-op Education Designation is awarded upon graduation to those students who have successfully completed a minimum of 12 months of work terms.

More information can be obtained from the Engineering and Science Co-op Program Office.

First Year Curriculum

The normal requirement for first year science (which must be completed before graduation) is MATH 1003, MATH 1013 (6 ch), 18 ch of First Year lectures in three of the four subject areas of Biology, Chemistry, Earth Sciences and Physics, plus 8 ch of laboratories to accompany lectures in two of the subject areas. In addition, there are two term courses of electives that may be taken which can be chosen from courses offered by various faculties (6 ch total) or they can be two terms of science laboratories (4 ch) to accompany the third science subject chosen. The total course load will be 36 to 38 ch depending on the above selections. The particular first year science lecture and lab courses should be chosen to fit into the student's future degree program. SCI 1001 is also normally taken in first year, but is not a requirement for graduation.

The First Year core science lecture and laboratory courses, respectively, are:

- BIOL 1001, BIOL 1012 and BIOL 1006, BIOL 1017
- CHEM 1001, CHEM 1012 and CHEM 1006, CHEM 1017
- ESCI 1001, ESCI 1012 and ESCI 1006, ESCI 1017
- MATH 1013 or MATH 1053 and MATH 1013 or MATH 1063
- PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072 and PHYS 1091, PHYS 1092

*Any exceptions allowed in a particular program will be noted in the program requirements. Courses such as CHEM 1982, CHEM 1987 and unassigned first level transfer credits in science disciplines could be used in some circumstances.

First Year Science Entrance Program

1. High School students who do not meet the admission requirements noted in the Admission Chart for direct entry to the BSc program but have a passing grade in each of the required courses, a minimum senior science average of 70% and an admission average of 70% may be considered for full time admission to an Entrance Program to the extent that capacity allows.
2. Students enrolled in the BSc Entrance Program are restricted to a maximum of 30 ch in the first year of studies. This is a prescribed set of courses as determined by the Faculty including SCI 1001, SCI 1002, MATH 1003, MATH 1013, 10 ch of a first-year Science subject and 10 ch of a second first-year Science subject as determined in consultation with a Faculty Advisor.
3. Students are required to meet with their Faculty Advisor on a regular basis.
4. Students who successfully complete their first year with a minimum GPA of 2.0, regardless of the total number of credit hours completed, receive credit for SCI 1001 and SCI 1002 and meet other conditions as outlined by the Faculty, will be approved for admission to the BSc program for the upcoming academic year.
5. Students who do not succeed in completing the program requirements will not be permitted to continue in the BSc Entrance program nor enter the BSc degree program.
6. Students can only register in the BSc Entrance program once.

Course Recognitions from other Institutions

UNB recognizes a number of field courses offered at the Huntsman Marine Science Centre, and other similar institutions, which may be used toward meeting part of the degree requirements for UNB students as subjected to the approval by the respective Departments or Divisions. Students should note that at least half the advanced-level courses counted towards Major/Honours/Minor in a Science subject must be from courses taken at the University of New Brunswick.

Advanced Placement Tests

Advanced Placement Tests in selected first year Science courses will be available to students achieving a grade of 90% in the appropriate Level 1 high school course or 95% in the appropriate Level 2 high school course. Advanced placement in Math requires a high school Calculus course beyond NB Math 120 with a minimum grade of 90%. The Department of Mathematics also offers a "Calculus Challenge Exam" to NB students at a school that has made arrangements with the Department of Mathematics and Statistics. The Challenge Exam is written in June. Consult the mathematics section of the calendar for more information.

The grade obtained on an advanced placement test will not be included in a student's GPA calculation. It will be equivalent to a transfer credit. A fee would be charged for each placement test.

Criteria for Granting B.Sc. (General Science) degrees to former UNB Science Students who are graduates from Professional Degree Programs

A student who has completed a minimum of 78 ch of science core courses, including those at the 1000 level, with the University of New Brunswick will be granted the BSc degree in General Science upon successful completion of a science-based health professional degree. The Faculty has determined that these requirements can be satisfied by students who have successfully completed Medicine, Dentistry, Veterinary Medicine, Pharmacy, or Optometry.

Students wishing to be considered for a BSc (Gen.Sci) degree who satisfy the above conditions must apply in writing, complete with official transcripts, to the Registrar. Students in professional programs not specifically listed above who are interested in being considered for the BSc (Gen.Sci.) degree, should contact the Office of the Dean of Science. Such students are expected to provide detailed description of courses in their programs as well as further information requested by the Faculty.

Regulations for Granting a Second UNB Bachelor of Science Degree

A student who holds a BSc degree from UNB may obtain, following further studies, a second specialization. See the regulations below. BSc degree holders from another university may apply for admission to and follow a program towards a second BSc degree. Further details can be found in the general regulations in Section VII in the University-wide Academic Regulations of this Calendar.

BSc graduates of UNB may apply for admission to and follow a program towards a second BSc undergraduate bachelor's degree under the following regulations:

- The general regulations of the University and the regulations of the degree program concerned must be satisfied.

- Degree and departmental regulations concerning option, concentration, Major or Honours must be satisfied.

Normally, the minimum number of credit hours which must be successfully completed beyond the work required for the previous degree would not be less than the normal load of the final academic year in the degree program concerned. More than the minimum number of credit hours, or courses, may be required.

The courses taken must be approved by the Dean and the Department, or Departments, under which the option, concentration, Major or Honours, falls.

The general regulation that at least half the total credit hours for a degree must be taken at this University will apply.

Candidates for a second undergraduate degree may not choose a Major, or option, or Honours, or concentration using the same Departmental discipline as in the first undergraduate degree, whether the discipline was part of a single or an interdepartmental program. (For example, a student with a BSc in Biology-Chemistry may not return and obtain a BSc in Chemistry. A student with a BSc in Earth Sciences may not return and obtain second BSc degree in Environmental Geochemistry.)

Students with a UNB BSc degree are not eligible to obtain a second degree under the special provisions for granting a BSc (General Science) after a professional school.

Students may be permitted to upgrade a Minor or a Major from the first degree under the following *Conditions:*

- A Minor from the first degree may be upgraded to a Major or Honours after completion of the first degree.

- A Major from the first degree may be upgraded to an Honours after completion of the first degree.

- In either case, a notation only will be included on the student record and a second degree will not be awarded.

Students will not be permitted to include a Minor in the second degree.

Students must make specific application to the Associate Registrar/Admissions for entry to the second degree program.

Only in special circumstances will students be admitted to a third undergraduate degree program.

The final decision on the course work requirements for a second undergraduate bachelor's degree shall be a matter of agreement between the Registrar and the Dean after consultation with the Chairs of Departments concerned.

BIOLOGY OPTION

General Office:	Bailey Hall, Room 29
Mailing Address:	Department of Biology University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4583
Fax:	(506) 453-3570
Email:	biology@unb.ca
Website:	http://www.unb.ca/fredericton/science/depts/biology/index.html

FACULTY

- Addison, Jason A., BSc, PhD (Dal.), Prof - 2008
- Alexander-Trusiak, Alexa, BSc (Queen's), MSc, PhD (UNB), Visiting Res Prof - 2018
- Baird, Donald J., BSc, PhD (Glasgow), Visiting Res Prof - 2003
- Barbeau, Myriam A., BSc (McG.), PhD (Dal.), Prof - 1999
- Barclay, Katherine D., BSc (UNB), MSc (Wat.), PhD (Guelph), Teaching Prof (Joint Kinesiology and Nursing) - 2001
- Benfey, Tillmann J., BSc (McG.), MSc (Memorial), PhD (Br.Col.), Prof - 1989
- Burridge, Leslie, BSc (Dal.), PhD (UNB), Adjunct Prof - 2016
- Chambers, Patricia A., BSc Honours (Trent), PhD (Scotland), Adjunct Prof - 2006
- Crawford, Bryan D., BSc (Alta), MSc (Vic.(BC)), PhD (S. Fraser) - Prof - 2006
- Curry, R. Allen, BES (Wat.), MSc (Trent), PhD (Guelph), Prof, Recreational Fisheries (ForEM) - 1997
- Cwynar, Les C., BSc, MSc, PhD (Tor.), Prof – 1988
- Dahal, Keshay, BSc (Nepal), MSc (Germany), PhD (Western), Adjunct Prof - 2019
- Diamond, Antony W., BA (Cambridge), MSc, PhD (Aberdeen), Emeritus Prof, Atlantic Laboratory for Avian Research (Joint ForEM) - 1994
- Didyk, Andy S., BA, PhD (UNB), Sr Teaching Assoc, (Joint Nursing) - 1999
- Duffy, Michael, BSc, PhD (UNB), Assoc Prof - 2005
- Durnford, Dion G., BSc (Dal.), PhD (Br.Col.), Prof - 1997
- Edge, Christopher, BSc (Guelph), MSc (Laurentian), PhD (UNB), Adjunct Prof - 2019
- Forbes, Graham J., BA (York), MA, PhD (Wat.), Prof (Joint ForEM) - 1997
- Hayden, Brian, BSc, PhD (Dublin), Asst Prof, Scientific Director of SINLAB -2018
- Heard, Stephen B., BSc (Wat.), PhD (Pennsylvania), Prof - 2002
- Johns, Robert, BSc (St.FX), PhD (UNB), Adjunct Prof - 2012
- Lawrence, Janice E., BSc (Dal.), Assoc Prof - 2003
- Linnansaari, Tommi, BSc, MSc (Helsenki), PhD (UNB), Assoc Prof, Salmon Chair - 2017
- MacLellan, Shawn R., BSc (Guelph), MSc (Guelph), PhD (McMaster), Assoc Prof - 2010
- Malenfant, Rene M., BSc (St.FX), BSc, PhD (Alberta), Assoc Teachiing Prof - 2016
- Martel, Veronique, BSc (Montreal), MSc (McG.), PhD (McG.), Adjunct Prof - 2015
- Miles, Kelly, BSc (Dal.), MSc (Dal.), Teaching Prof - 2012
- Nedelcu, Aurora M., BSc (Romania), PhD (Dal.), Prof - 2002
- Parachnowitsch, Amy, BSc (S Fraser), MSc (Guelph), PhD (Cornell) Assoc Prof - 2018
- Patten, Cheryl L., BSc, PhD (Wat.), Prof - 2004
- Peake, Stephan J., BSc General, BSc Honors (Guelph), MSc (Wat.), PhD (S. Fraser), Assoc Prof - 2002
- Pureswaran, Deepa, BSc, MSc, PhD (S.Fraser), Adjunct Prof - 2010
- Rendell, Drew, BSc (Calg.), MSc (California), PhD (California), Prof - 2015
- Reyes Prieto, Adrian, BSc, PhD (Mexico), Assoc Prof - 2009
- Sacobie, Charles F., BSc, MSc, PhD (UNB), Teaching Prof - 2013
- Saunders, Gary W., BSc, MSc (Acad.), PhD (S. Fraser), Prof, UNB Chair in Molecular Systematics & Biodiversity, and Chair - 1995
- Sharp, Lisa, BSc (Br.Col.), MSc (Vic. BC), BCIDP (Vancouver Community College), Teaching Prof - 2001
- Sherrard, Mark, BSc (MTA), MSc, PhD (Guelph), Asst Teaching Prof - 2020
- Trudel, Marc, BSc, PhD (McG), Adjunct Prof - 2020

General Information
Biology Goal

The educational goal of the Department of Biology at UNB is to foster a fascination with and an ability to learn about progress in the biological sciences, and appreciate the importance of these fields to society. This is achieved through teaching within the department that emphasises the questions of contemporary biology, and how they are asked. Our graduates understand that the sub-disciplines of 21st century biology are interrelated, ask questions at a range of spatial and temporal scales, with a broad taxonomic scope, and that these dynamic disciplines have a strong quantitative foundation.

Our aim is to provide students with a foundation upon which they can build in future professional or postgraduate training, and as scientifically literate citizens of our society.

Programs in Biology

The Department of Biology offers the following programs: Honours (by Thesis or by Course), Major and Minor.

Either of the *Honours programs* provides students with the preparation required for graduate work in Biology or admission to many professional schools.*

The *Major program* is designed to provide concentrated study in Biology while maximizing a student's access to the offerings of other Departments and Faculties. It will therefore be of use to students with interdisciplinary educational and career objectives. With care, students should be able to use this to satisfy *Prerequisites* to many professional schools.*

Both the Honours and the Major programs have Pre-Health Profession (PHP) Concentrations designed to help students prepare for health-professional schools. The program requirements for these concentrations are the same as for the regular Honours and Major programs, but additional courses are recommended as electives. Students interested in the PHP Concentration must discuss their intentions with their Biology advisor early in their program to ensure appropriate timetabling of these electives.*

The *Minor program* is structured to meet the individual needs of the student and will complement his/her major program.

Admission to these programs is by application to the Chair of Biology or Director of Undergraduate Studies. Minimum cumulative grade point average (CGPA) requirements and *Prerequisites* may be required for admission.

An advisor, assigned to each successful applicant, must approve course selections according to the guidelines given below.

Students are reminded that courses offered by other Departments form an important complementary part of the overall program of studies. A minimum of 12 ch of electives selected from the course offerings of the Faculty of Arts are required in the Honours and Major programs.

NOTE:* In addition to their Biology advisor, pre-professional students must consult the Assistant Dean of Science for information about *Prerequisites* and advice on program planning.

Program Requirements
Major Program (132 ch total)
Level I

1. BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017; CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017; MATH 1003 or MATH 1053 and one of MATH 1013, MATH 1063 or STAT 2264.
2. 2 more term courses of first year science lectures (Physics or Earth Sciences).

Level II

1. BIOL 2003, BIOL 2008, BIOL 2023, BIOL 2028, BIOL 2063; BIOL 2068; one of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; CHEM 2401 (3 ch) and STAT 2264 (3 ch) * (See **NOTE** 2)

Levels III and IV

Upper level (Level III or IV) Biology courses totalling a minimum of 34 ch, including a minimum of 12 ch of laboratory or field courses (denoted by the course designation "L" in the course description). Courses considered toward the laboratory and field experience requirement include BIOL 3058, BIOL 3083, BIOL 3113, BIOL 3173, BIOL 3207, BIOL 3293, BIOL 3301, BIOL 3371, BIOL 3383, BIOL 3412, BIOL 3441, BIOL 3541, BIOL 3593, BIOL 3603, BIOL 3703, BIOL 3883, BIOL 3908, BIOL 3933, BIOL 4182, BIOL 4211, BIOL 4221, BIOL 4368, BIOI 4393, BIOL 4443, BIOL 4523, BIOL 4533, BIOL 4581, BIOL 4641, BIOL 4688, BIOL 4691, BIOL 4723, BIOL 4732, BIOL 4746, BIOL 4851, BIOL 4863, BIOL 4981, and BIOL 4991 (but do not include BIOL 3149, BIOL 4149, or BIOL 4090).

Electives

1. 12 ch of Arts courses.
2. 24 ch of other courses (in almost any field including Biology) * (see **NOTE** 4).

NOTES: (*)

1. A C grade or better is required in all courses for Biology degree programs. Students in all Biology programs will not be allowed to take any third or fourth level Biology courses, until they have passed (C minimum) all first level requirements for Biology programs.
2. If STAT 2264 is counted as a first year requirement, then an extra 3 ch of Level III/IV courses must be taken.
3. Students are urged to register early (by the end of classes, Winter term) for courses they plan to take in the next academic year that are required for their program and that have limited enrolment.

4. Some courses offered in other Faculties will not be considered for credit toward a BSc; so, students should see their advisor for course approval.

Honours Program (144 ch total):

There are two honours programs: Honours by Course and Honours by Thesis. Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in either program.

Application to the Honours by Thesis program is initiated by writing a letter of intent to the Chair of Biology before preregistration at the end of year 3. Students must make arrangements to complete their dissertation research with a Faculty member in the Department of Biology before applying to the Program. BIOL 4090 (Honours Thesis Project) is required and the course description should be consulted for further information and specific procedures. As well, a general research skills course, either BIOL 3933, BIOL 3943, BIOL 4463 or BIOL 5473, is required (note that a student can do more than one of the general research skills courses).

Level I

1. BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017; CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017; MATH 1003 or MATH 1053 and one of MATH 1013, MATH 1063 or STAT 2264.
2. 2 more term courses of first year science lectures (Physics or Earth Sciences).

Level II

BIOL 2003, BIOL 2008, BIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068; one of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; CHEM 2401 (3 ch) and STAT 2264 (3 ch)* (see **NOTE** 2).

Levels III and IV

Upper level (Level III or IV) Biology courses totalling a minimum of 46 ch, including a minimum of 12 ch of laboratory or field courses (denoted by the course designation "L" in the course description). Courses considered toward the laboratory and field experience requirement include BIOL 3058, BIOL 3083, BIOL 3113, BIOL 3173, BIOL 3207, BIOL 3293, BIOL 3301, BIOL 3373, BIOL 3383, BIOL 3412, BIOL 3441, BIOL 3541, BIOL 3593, BIOL 3603, BIOL 3703, BIOL 3883, BIOL 3908, BIOL 3933, BIOL 4182, BIOL 4211, BIOL 4221, BIOL 4368, BIOL 4393, BIOL 4443, BIOL 4523, BIOL 4533, BIOL 4581, BIOL 4641, BIOL 4688, BIOL 4691, BIOL 4723, BIOL 4732, BIOL 4746, BIOL 4851, BIOL 4863, BIOL 4981, and BIOL 4991 (but do not include BIOL 3149, BIOL 4149, or 4090). As well, a general research skills course, either BIOL 3493, BIOL 3933, BIOL 4463 or BIOL 5473, is required (note that a student can do more than one of the general research skills courses). For the Honours by Thesis, the minimum of 46 ch also includes BIOL 4090 and one of the general research skills courses (BIOL 3933, BIOL 3943, BIOL 4463, BIOL 4483, or BIOL 5473).

Electives

1. 12 ch of Arts courses.
2. 24 ch of other courses (in almost any field, including Biology)* (see **NOTE** 4).

NOTES:(*)

1. A C grade or better is required in all courses for Biology degree programs. Students in all Biology programs will not be allowed to take any third or fourth level Biology courses, until they have passed (C minimum) all first year requirements for Biology programs.
2. If STAT 2264 is counted as a first year requirement, then an extra 3 ch of Level III/IV courses must be taken.
3. Students are urged to register early (by the end of classes, Winter term) for courses they plan to take in the next academic year that are required for their program and that have limited enrolment.
4. Some courses offered in other Faculties will not be considered for credit toward a BSc; so, students should see their advisor for course approval.
5. The Honours student (by course or by thesis) must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

Minor Program:

The Minor in Biology is designed for students in other Departments of the Faculty of Science, and outside the Faculty of Science, who are interested in a coherent package of Biology courses. The Minor follows section V in the "University Wide Academic Regulations" of the Undergraduate Academic Calendar and consists of BIOL courses, totalling at least 24 credit hours with a grade of C or better, approved by the Biology Director of Undergraduate Studies. The Level II BIOL courses and the Concentrations can be used as guidelines. Students requiring BIOL 1001, BIOL 1006, BIOL 1012 and BIOL 1017, or other BIOL courses for their Major are not eligible to also count these courses towards a Biology Minor. Students not requiring Biology courses for their Major must take, and can count, BIOL 1001, BIOL 1006, BIOL 1012 and BIOL 1017 as part of their Biology Minor. Also, see **NOTE** 2 below.

*Additional NOTES:

1. Some upper level courses (3000 and 4000 level) have limited enrolment. Students should register in the Winter term for these courses, since assignments will be made in May following pre-

registration. Priority for admission is as follows: Year IV Honours, Year IV Majors, Year III Honours, Year III Majors. Within each category, students will be selected based on CGPA (and at the discretion of the instructor). If space permits, students in a Minor program may also enrol in these courses.

2. Some Biology courses are designed for non-Science students. Students enrolled in Biology programs may take these courses, but they can only be considered as electives for the purposes of the Biology programs. Permission of the instructor may be required. Such courses include: BIOL 1711, BIOL 1719, BIOL 1782, BIOL 1789, BIOL 1846, BIOL 2251, BIOL 2259, BIOL 2501, BIOL 2509, BIOL 2513, BIOL 2519, BIOL 2721, BIOL 2761, BIOL 2769, BIOL 2792.

Co-operative Work Experience in Biology

The Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through the Department of Biology and other Science departments and programs, operates a Co-operative Education Program. Co-op opportunities are available for qualified students; please refer to the Science section of this calendar for detailed information.

Concentrations

Upper level Honours and Major students in Biology can choose from many Biology courses (see requirements for Levels III and IV, above). Concentrations are optional and designed to guide students who want more focused education in a specific area, and can be indicated on the final transcript at graduation if a student successfully completes a minimum of 24 ch from the Concentration. The majority of these 24 ch should come from the "Recommended courses" list, and the remaining ch from the "Other Relevant courses" list. Note that BIOL 3933, BIOL 3943 and BIOL 5473 can count towards any of the Concentrations. Selection must be approved by an academic advisor and the student must then indicate their concentration on their application to graduate. Note that only one concentration can be selected per degree.

Aquatic Biology Concentrations	
Recommended courses:	BIOL 3383, BIOL 3883, BIOL 4741, BIOL 4746 or BIOL 4981, BIOL 4773, BIOL 4863, BIOL 4973, BIOL 4991, BIOL 6183.
Other Relevant courses:	BIOL 3603, BIOL 3802, BIOL 3908, BIOL 4393, BIOL 4443; ENR 2531, ENR 3201; also see Marine Biology Concentration; ENR 3457, FOR 4576.
Biological Diversity Concentration	
Recommended courses:	BIOL 1846, BIOL 3083, BIOL 3207, BIOL 3261, BIOL 3301, BIOL 3371 or ESCI 3271, BIOL 3493, BIOL 3603, BIOL 3673, BIOL 3703, BIOL 3883, BIOL 4221, BIOL 4233, BIOL 4351, BIOL 4443, BIOL 4523, BIOL 4581, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4746 or BIOL 4981.
Other Relevant courses:	BIOL 3162, BIOL 3383, BIOL 3633, BIOL 4043, BIOL 4182, BIOL 4368, BIOL 4533, BIOL 4691, BIOL 4823.
Cell and Molecular Biology Concentration	
Recommended courses:	BIOL 3013, BIOL 3033, BIOL 3043, BIOL 3058, BIOL 3073, BIOL 3207, BIOL 3261, BIOL 4043, BIOL 4302.
Other relevant courses:	BIOL 3162, BIOL 3242, BIOL 3311, BIOL 3323, BIOL 3493, BIOL 3593, BIOL 3673, BIOL 3812, BIOL 4123, BIOL 4182, BIOL 4533, BIOL 4581.
Environmental Biology Concentration	
Studies interested in environmental biology should take ESCI 1001, ESCI 1006, and ESCI 1012.	
Recommended courses:	BIOL 4863; BIOL 3261 and BIOL 3207 or BIOL 3802 and BIOL 3908, or BIOL 3412; BIOL 3371 or ESCI 3271, BIOL 3441 or FOR 3445, BIOL 3453, BIOL 3633, BIOL 4191, BIOL 4233, BIOL 4351, BIOL 4773; CHEM 2121 and CHEM 2136; ENVS 2003, ENVS 2023; FOR 2281.
Other relevant courses:	BIOL 1846, BIOL 3083; BIOL 3173, BIOL 3293, BIOL 3301, BIOL 3383, BIOL 3603, BIOL 3703, BIOL 3883, BIOL 4302, BIOL 4368, BIOL 4393, , BIOL 4443, BIOL 4563, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4746; ENVS 4001, ENVS 4002; ESCI 3442, ESCI 4452; FOR 4545, FOR 4721; PHIL 3206; see also Marine Biology Concentration.
Evolutionary Biology Concentration	
Recommended courses:	BIOL 3013, BIOL 3113, BIOL 3242, BIOL 3293, BIOL 4123, BIOL 4523, BIOL 4533, BIOL 4563.
Other relevant courses:	BIOL 3083, BIOL 3301, BIOL 3603, BIOL 3703, BIOL 3873, BIOL 3883, BIOL 4221, BIOL 4581, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4823.

General Zoology Concentration

Recommended courses:	BIOL 3603, BIOL 3703, BIOL 3802, BIOL 3908.
Suggested field courses:	BIOL 3173, BIOL 3383.
Other relevant courses:	BIOL 3162, BIOL 3593, BIOL 3673, BIOL 3812, BIOL 3873, BIOL 3883, BIOL 4182, BIOL 4523, BIOL 4691, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4746 or BIOL 4981.

Pre-Health Profession Concentration

Recommended courses:	BIOL 1711 or BIOL 1719, BIOL 2761 or BIOL 2721, BIOL 2792 or BIOL 1782 or BIOL 1789, BIOL 3207, BIOL 3261, BIOL 3311, BIOL 3493, BIOL 3593, BIOL 3713, BIOL 3833, BIOL 3843.
Other relevant courses:	BIOL 3013, BIOL 3043, BIOL 3058, BIOL 3162, BIOL 3323, BIOL 3673, BIOL 3812, BIOL 4123, BIOL 4182, BIOL 4953.

Marine Biology Concentration

Students should complete the Level II requirements prior to entering this concentration. The Marine Block Semester offers four of the recommended courses in the Fall term in a block format, where the courses are offered consecutively over the term.

Recommended course:	BIOL 3633.
Marine Block courses (recommended; taken together in the Fall term):	BIOL 4211, BIOL 4221, and any four of BIOL 4641, BIOL 4691, BIOL 4851, BIOL 4981, or BIOL 4991.
Other relevant courses:	BIOL 3173, BIOL 3603, BIOL 4233, BIOL 4393, BIOL 4741, BIOL 4746, BIOL 4773, BIOL 4863.

Physiology Concentration

Recommended courses:	BIOL 3033, BIOL 3043, BIOL 3162, BIOL 3207, BIOL 3261, BIOL 3412, BIOL 3593, BIOL 3802, BIOL 3812, BIOL 3908, BIOL 4043, BIOL 4182, BIOL 4823.
Other relevant courses:	BIOL 3083, BIOL 3133, BIOL 3311, BIOL 3603, BIOL 3703, BIOL 3673, BIOL 4688, BIOL 4723, BIOL 4732, BIOL 4741.

Wildlife, Ecology and Conservation Concentration

Recommended courses:	BIOL 3083, BIOL 3113, BIOL 3293, BIOL 3441, BIOL 3541, BIOL 3603, BIOL 3673, BIOL 3703, BIOL 3873, BIOL 3883, BIOL 4191, BIOL 4233, BIOL 4351, BIOL 4393, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4773, BIOL 4863, BIOL 4973.
Relevant field courses:	BIOL 3173, BIOL 3383, BIOL 4443; also see Marine Biology Concentration.

CHEMISTRY OPTION

DEPARTMENT OF CHEMISTRY

General Office:	F.J. Toole Hall, Room 15
Mailing Address:	Department of Chemistry, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4781
Fax:	(506) 453-4981
Email:	chem@unb.ca
Website:	http://www.unb.ca/fredericton/science/depts/chemistry/index.html

FACULTY

- Adam, Allan G., BSc, MSc (Western), PhD (Waterloo), Prof (Cross Appt - Physics)- 1991
- Balcom, Bruce, BSc (Mt.Allison), PhD (Western), Prof (Cross Appt - Physics) - 1993
- Blight, Barry, BSc (Mt. Allison), PhD (Western), Assoc Prof - 2017
- Bottomley, Frank, BSc, MSc (Hull), PhD (Toronto), DSc (Hull), FCIC, Prof Emeritus - 1999
- Burns, David H., BSc, (University of Puget Sound), PhD (University of Washington), FCIC , Prof - 2012
- Calhoun, Larry, BSc, MSc, PhD (UNB), Assoc Prof - 1994
- Chibante, Felipe, BSc (McGill), Ma (Rice), PhD (Rice), Assoc Prof (Richard J. Currie Chair in Nanotechnology; Cross Appt - Chemical Eng) - 2007
- Cooper, Rodney h., BMath, MMath (Waterloo), Prof Emeritus (Cross Appt Computer Science)- 2018
- Decken, Andreas, Dip (Duisburg), PhD (McMaster), Assoc Prof - 1995

- Deslongchamps, Ghislain, BSc (Sherbrooke), PhD (UNB), University Teaching Prof (Cross Appt- C.S.)- 1992
- Dyker, C. Adam, BSc (UNB), PhD (Dalhousie), Assoc Prof - 2010
- Eisler, Sara, BSc, PhD (Alberta), Assoc Prof - 2008
- Findlay, John A., BSc, PhD (UNB), FCIC, Hon Res Prof - 1995
- Grein, Friedrich, BSc, MSc (Goettingen), PhD (Frankfurt), FCIC, Prof Emeritus - 1995
- Ignaszak, Anna, BSc (Poznan Univ of Technology), PhD (AGH Univ of Science and Technology), Assoc Prof - 2015
- Kang, Guojun, BS (Nankai), PhD (McGill), Research Assoc - 1993
- Elbakali-Kassimi, Noureddin, BSc (Rabat), DEA, PhD (Paris), Sr. Teaching Assoc - 2000
- MaGee, David I., BSc, PhD (UNB), Prof and Vice President Research - 1990
- Mattar, Saba M., BSc (Alexandria), MSc (Amer U Of Cairo), PhD (McGill), Prof Emeritus 2015
- Neville, John, BSc (UNB), PhD (UBC), Assoc Prof and Chair - 1999
- Ni, Yonghao, BEng (Northwest Inst of Light Industry), MEng, PhD (McGill), Prof and CRC Chair in Pulping Tech. (Joint Chemical Eng) - 1993
- Passmore, Jack, BSc, Dipl Ed (Bristol), PhD (UBC), DSc (Bristol), FCIC, Prof Emeritus- 2007
- Reeves, Valerie, BSc, PhD (UNB), Sr. Teaching Assoc - 2005
- Tait, James, BSc, PhD (Western), Sr. Teaching Assoc - 2007
- Thakkar, Ajit, BSc, PhD (Queens), FCIC, Prof Emeritus - 2015
- Valenta, Zdenek, Dip. (Zurich), PhD (UNB), Prof Emeritus - 1993
- Villemure, Gilles, BSc, PhD (Ottawa), Prof – 1990

General Information

There are five chemistry degree programs: Major, Medicinal Chemistry Major, Honours, Medicinal Chemistry Honours and Chemistry Co-op. All five programs have national accreditation under the Canadian Society for Chemistry. The Honours and Chemistry Co-op programs are recommended for students pursuing graduate studies and careers in chemistry. The Medicinal Chemistry Honours program is recommended for students pursuing graduate studies leading to careers in the health professions or the pharmaceutical industry. There are two options available in the Chemistry Honours and Medicinal Chemistry Honours programs; Honours by Thesis, and Honours by Course. A Minor program is offered for students in other departments of the Faculty of Science and outside the Science Faculty who are interested in a coherent package of chemistry courses.

Valid WHMIS (Workplace Hazardous Materials Information System) certification is required for all students who wish to take CHEM laboratory courses. Information regarding WHMIS training will be provided during the first week of classes.

Minor Program

The Minor in Chemistry is designed for students in other Departments of the Faculty of Science, and outside the Faculty of Science, who are interested in pursuing a greater understanding of chemistry. The Minor follows section V in the "University Wide Academic Regulations" of the Undergraduate Academic Calendar and consists of CHEM courses, totalling at least 24 credit hours with a grade of C or better, approved by the Chemistry Director of Undergraduate Studies. Students requiring CHEM 1001, CHEM 1006, CHEM 1012 and CHEM 1017, or other CHEM courses for their Major are not eligible to also count these courses towards a Chemistry Minor. Students not requiring Chemistry courses for their Major must take, and can count, CHEM 1001, CHEM 1006, CHEM 1012, and CHEM 1017, as part of their Chemistry Minor.

First Year

CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, PHYS 1061 and PHYS 1062 or PHYS 1071 and PHYS 1072, BIOL 1001, BIOL 1012, and either BIOL 1006 and BIOL 1017, or PHYS 1091 and PHYS 1092 plus 6 ch electives. The minimum credit hour requirements beyond first year are:

Major: 64 chemistry, 3 biology, 6 mathematics, 18 electives.
Honours by Thesis: 77 chemistry, 3 biology, 6 mathematics, 18 electives.
Honours by Course: 77 chemistry, 3 biology, 6 mathematics, 18 electives
Chemistry Co-op: Please refer to the Science section of this calendar for detailed information.
NOTE: A minimum of twelve (12) ch of the twenty-four (24) ch of electives must be from the Faculty of Arts.

Chemistry Major Program

Second Year

CHEM 2002, CHEM 2201, CHEM 2222, CHEM 2237, CHEM 2421, CHEM 2422, CHEM 2416, CHEM 2601, MATH 2003, MATH 2213 or equivalent (approved by the Chemistry department), plus electives.

Third and Fourth Year

BIOL 2023, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3637, two of CHEM 4112, CHEM 4222, CHEM 4422, and CHEM 4622, and a minimum of 17 ch from the following lecture courses: CHEM 2321, CHEM 3201, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 4503 (counts as a 3 ch lecture course), CHEM 4513, CHEM 4601, CHEM 4612, CHE 2501, CHE 5313, CHE 5522, CHE 5714, CHE 5824, and a minimum

of 10 ch from the following laboratory courses: BIOL 2028, CHEM 3009, CHEM 3019, CHEM 3236, CHEM 3137, CHEM 4503, (counts as a 2 ch laboratory course), CHEM 4416, CHEM 4616, CHE 2506, plus electives.

Chemistry Honours Program

Entry into the Honours program is allowed after first year provided that a minimum CGPA of 3.0 has been attained for all subjects taken in the degree program. A CGPA of 3.0 must be maintained in subsequent years. The graduating Honours student must achieve a minimum CGPA of 3.7 for First Class Honours standing and a minimum of 3.0 for Honours standing. A student completing all the course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree. Students must notify the Director of Undergraduate Studies of their intent to pursue an Honours Program, for appropriate academic advising.

Second Year
CHEM 2002, CHEM 2201, CHEM 2222, CHEM 2237, CHEM 2421, CHEM 2422, CHEM 2416, CHEM 2601, MATH 2003, MATH 2213 or equivalent (approved by the Chemistry department), plus electives.

Third and Fourth Year Option 1 (Honours by Thesis)
BIOL 2023, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3637, CHEM 4000, three of CHEM 4112, CHEM 4222, CHEM 4422, and CHEM 4622, and a minimum of 21 ch from the following lecture courses: CHEM 2321, CHEM 3201, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 4212, CHEM 4503 (counts as a 3 ch lecture course), CHEM 4513, CHEM 4601, CHEM 4612, CHE 2501, CHE 5313, CHE 5522, CHE 5714, CHE 5824, and a minimum of 8 ch from the following laboratory courses: BIOL 2028, CHEM 3009, CHEM 3019, CHEM 3236, CHEM 3137, CHEM 4503 (counts as a 2 ch laboratory course), CHEM 4616, CHE 2506, plus electives.

Third and Fourth Year Option 2 (Honours by Course)
BIOL 2023, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3637, three of CHEM 4112, CHEM 4222, CHEM 4422, and CHEM 4622, and a minimum of 24 ch from the following lecture courses: CHEM 2321, CHEM 3201, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 4212, CHEM 4503 (counts as a 3 ch lecture course), CHEM 4513, CHEM 4601, CHEM 4612, CHE 2501, CHE 5313, CHE 5522, CHE 5714, CHE 5824, and a minimum of 14 ch from the following laboratory courses: BIOL 2028, CHEM 3009, CHEM 3019, CHEM 3236, CHEM 3137, CHEM 4503 (counts as a 2 ch laboratory course), CHEM 4416, CHE 2506, plus electives.

Chemistry Co-op Program
The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through the Department of Chemistry and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are available for qualified students, please refer to the Science section of this calendar for detailed information.

Medicinal Chemistry Program

First Year
CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003, or MATH 1053, MATH 1013 or MATH 1063, PHYS 1061 and PHYS 1062 or PHYS 1071 and PHYS 1072, BIOL 1001, BIOL 1012, BIOL 1006, BIOL 1017

The minimum credit hour requirements beyond first year are:
Medicinal Chemistry Major: 61 chemistry, 12 biology, 6 mathematics, 18 electives.
Medicinal Chemistry Honours by Thesis: 71 chemistry, 12 biology, 6 mathematics, 24 electives.
Medicinal Chemistry Honours by Course: 72 chemistry, 12 biology, 6 mathematics, 24 electives.

Medicinal Chemistry Major Program
Second Year
BIOL 2023, CHEM 2002, CHEM 2201, CHEM 2222, CHEM 2237, CHEM 2416, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, MATH 2213 or equivalent (approved by the Chemistry department), plus electives.
Third Year
BIOL 2053, BIOL 2251, CHEM 2121, CHEM 2136, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 3637, CHEM 4416, plus electives.
Fourth Year
BIOL 3493, CHEM 4513, CHEM 4422, CHEM 4503, two of BIOL 2028, CHEM 3137, CHEM 3236, CHEM 4616, one of CHEM 3122, CHEM 3201, CHEM 4212, CHEM 4601, CHEM 4612, STAT 2264 plus electives.

Medicinal Chemistry Honours Program
Second Year
BIOL 2023, CHEM 2002, CHEM 2201, CHEM 2222, CHEM 2237, CHEM 2416, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, MATH 2213 or equivalent (pre-approved by the Chemistry department), plus electives.
Third Year
BIOL 2053, BIOL 2251, CHEM 2121, CHEM 2136, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 3637, CHEM 4416, plus electives (must include 3 ch of an approved science elective).
Fourth Year Option 1 (Honours by Thesis)

BIOL 3493, CHEM 4000, CHEM 4422, CHEM 4503, CHEM 4513, one of BIOL 2028, CHEM 3137, CHEM 3236, CHEM 4616, two of CHEM 3122, CHEM 3201, CHEM 4601, CHEM 4612, STAT 2264, plus electives.
Fourth Year Option 2 (Honours by Course)
BIOL 3493, CHEM 4422, CHEM 4503, CHEM 4513, two of BIOL 2028, CHEM 3137, CHEM 3236, CHEM 4616, fourteen credit hours from CHEM 3122, CHEM 3201, CHEM 4112, CHEM 4212, CHEM 4222, CHEM 4601, CHEM 4612, CHEM 4622, STAT 2264, plus electives.

EARTH SCIENCES OPTION

DEPARTMENT OF EARTH SCIENCES

General Office:	Forestry & Geology Building, Room 112
Mailing Address:	Department of Earth Sciences, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4804
Email:	odonnell@unb.ca (Tammy O'Donnell)
Website:	http://www.unb.ca/fredericton/science/depts/earth-sciences/index.html

FACULTY

- Broster, Bruce, BSc (Waterloo), PhD (UWO), Prof - 1987
- Butler, Karl E., P. Eng, BSc (Queens), MSc (UBC), PhD (UBC), Prof & Chair – 1999
- Enright, Allison, BSc (Ottawa), MSc (Toronto), PhD (Toronto), Asst Prof - 2020
- Keighley, David, BSc (Manchester), PhD (UNB), Prof & Asst Dean - 2004
- Lentz, David R., BSc (UNB), MSc (UNB), PhD (Ottawa), Prof - 2000
- Limoges, Audrey, BSc, MSc, PhD (UQAM), Assoc Prof – 2017
- McFarlane, Chris R.M., BSc (Toronto), MSc (Calgary), PhD (Austin), Prof - 2007
- Shaw, Cliff, BSc (Goldsmith), MSc, PhD (Western), Prof - 2002
- Timmermans, Ann C., BSc (Waterloo), MSc (Carleton), PhD (Carleton) Instructor - 2014
- White, Joseph C., BSc, PhD (Western), Prof - 1981
- Williams, Paul F., BSc (Durham), MSc (NSW), PhD (Sydney), Em. Prof - 1980

Adjunct

- Tom Al
- Stephen Donovan
- Alexandre Normandeau
- Vernon Singhroy
- Owen Sherwood
- John Spray
- Deanne van Rooyen
- Erin Walton

General Information
The Department of Earth Sciences offers Bachelor of Science options in Earth Sciences, and in Environmental Geosciences, (see the Environmental Geosciences section of this calendar), as well as a Joint Program in Earth Sciences and Physics (see the Interdepartmental Programs section of this calendar). Co-op programs are available. A Bachelor of Arts in Earth Sciences, and a Minor in Earth Sciences, are also offered for students in other programs that are interested in a coherent set of earth sciences courses. Introductory (1000-level) lecture courses require no previous (high school) experience in the earth sciences. Further details about Earth Sciences are available at https://www.unb.ca/fredericton/science/depts/earth-sciences/index.html .

W.E. Hale Fund and the McAllister/Silver Fund
In addition to the required field schools, the Department supports non-credit field trips in alternate years through the W.E Hale Fund and the McAllister/ Silver Standard Fund. These funds partly defray the cost for students of trips generally scheduled during spring break or after the end of the winter term. The Hale Fund was established by friends and colleagues of the late Dr. W.E Hale, a Professor and former Chair of the Department of Geology (Earth Sciences), and the intinerary is initiated by the students. In the past the Hale Fund has sponsored trips to Iceland, Ireland and Scotland, the Eifel region in Germany, Italy, Hawaii, and Greece. The McAllister/Silver Standarrd Fund was established by Dr. Robert Quartermain, BSc UNB, founder of Silver Standard, in honour of Dr. Arnie McAllister, also a former Department Chair, who introduced Robert to Economic Geology. The McAllister/Silver Standard trip is initiated by a faculty member and previously has visited Spain and Portugal, Greek Islands, Grand Canyon and SW USA, Nevada, and Eastern Europe.

Professional Registration
Geoscience is a regulated profession in most of Canada. Individual provinces and territories have legislative acts that restrict the practice of

geoscience to individuals who are registered members of professional associations. In New Brunswick, the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB) is the licensing body. In order to meet the requirements of professional registration, specific academic training and four years of appropriate full-time experience as a geologist- or geophysicist-in-training following graduation are needed.

Geoscientists Canada has developed a set of guidelines for the academic training that are used by most provinces. The professional stream programs offered by the Department (Earth Sciences Option, honours and majors programs: Environmental Geosciences option, honours and major programs) meet these current guidelines. However because the academic requirements are set by the individual provincial bodies, outside of the control of the Department of Earth Sciences, and the provincial bodies are free to change their requirements at any time, there is no guarantee that a student will meet the academic requirements for registration. Students are urged to consult the relevant provincial body to ensure that they meet the necessary subject and grade requirements.

Earth Sciences Programs

Within the Earth Sciences Option, four programs are offered to students starting their second year in Science:

1. **Geological Studies, Major Program** - (minimum of 137 ch): This program is designed for those students who are looking for some specialization in Earth Sciences and the opportunity of taking more elective courses outside the Department. Minimum course requirements are given below. Students are reminded that courses offered by other Departments can form an important complementary part of the overall course of studies. This program typically does not meet all of the requirements for professional registration.

2. **Geological Studies, Honours Program** - (minimum of 145 ch): This program follows the same outline as the Geological Studies major program above, but gives the student the opportunity to undertake specialized independent research in some aspect of the Earth Sciences that is then submitted as a written thesis. A cgpa of 3.0 is required at the time of entry, normally the start of the student's final year. Honours students are not formally recognized as such until this time. This program typically does not meet all of the requirements for professional registration.

3. **Earth Sciences, Major Program** - (minimum of 141 ch): This program is recommended for students intending to either pursue graduate studies in the Earth Sciencs, or whose goal is to become a professional geoscientist. It has more required courses so that the program meets the current knowledge requirements for professional registration.

4. **Earth Sciences, Honours Program** - (minimum of 149 ch): This program follows the same outline as the Earth Sciences major program above, but gives the student the opportunity to undertake specialized independent research in some aspect of the Earth Sciences that is then submitted as a written thesis. A cgpa of 3.0 is required at the time of entry, normally the start of the student's final year. Honours students are not formally recognized as such until this time. The program meets the current knowledge requirements for professional registration.

Common Core

All students in the Earth Sciences and Environmental Geosciences options take a common core in the first two years of study.

First Year (36 ch minimum)

ESCI 1001, ESCI 1006 or ESCI 1026, ESCI 1012, ESCI 1017, SCI 1001, SCI 1002; MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017. The third science must also include the labs, either PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092, or BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017.

Any deficiencies in the first-year requirements must be made up in the second year.

PHYS 1071 and PHYS 1072 may be substituted for PHYS 1061 and PHYS 1062, but students are cautioned that they may not be accepted for professional registration in some provinces.

Second Year (37 ch minimum)

ESCI 2131, ESCI 2142, ESCI 2211, ESCI 2321, ESCI 2522, ESCI 2602, ESCI 2703, STAT 2264 or STAT 2593. Two science electives (6 ch minimum) chosen from the following:

PHYS 1061 and PHYS 1091 (counts as one elective)
PHYS 1062 and PHYS 1092 (counts as one elective)
BIOL 1001 and BIOL 1006 (counts as one elective)
BIOL 1012 and BIOL 1017 (counts as one elective)
MATH 1503 or MATH 2003
CS 1003 or CS 1073
CHEM 2121 or CHEM 2201 or CHEM 2321 or CHEM 2401 or CHEM 2421

Courses used to satisfy first year requirements cannot be used to meet this requirement. Students intending to meet professional requirements must take a full year of physics (PHYS 1061/1062/1091/1092) by the end of second year. Other sciences may be taken with the approval of the Director of Undergraduate Studies.

At the end of the winter term of the second year, students must choose an option and program stream. Because many third and fourth year courses are offered in alternate years, students must consult with the Director of Undergraduate Studies when planning their program in order to graduate in a timely fashion.

Honours Program

Entrance to the Earth Sciences Honours Program requires a cumulative grade point average of at least 3.0 overall, by the end of the third year. The student must have completed all first and second year requirements and at least 20 ch of earth science requirements listed below. An application for admission to the Honours program, available from the Director of Undergraduate Studies, must be submitted by the last day to add classes of the fall term of the fourth year. Students not admitted to the Honours Program may continue in the Major Program.

For graduation with an Honours degree, a minimum cumulative grade point average of 3.0 and a grade of B- or higher in ESCI 4900 are required. Students failing to meet these requirements will be awarded a Major degree.

Third and Fourth Year (76 ch minimum)

ESCI 3131, ESCI 3271, ESCI 3322, ESCI 3703, ESCI 4312; one of ESCI 4501 or ESCI 4512; two of ESCI 3482, ESCI 3492, or ESCI 4461; two of ESCI 4112 or ESCI 4212 or ESCI 4401, and ESCI 4900 plus the following electives:

Electives

One ESCI elective at the 2000 level or above. Optional courses not used above may be used as electives.

Four elective courses from the Faculty of Arts (minimum of 12 ch)

Five free elective courses (minimum of 15 ch) from any Faculty or Department. Additional ESCI courses may be counted here up to a maximum of three courses.

Major Program

Third and Fourth Year (68 ch minimum)

ESCI 3131, ESCI 3271, ESCI 3322, ESCI 3703, ESCI 4312; two of ESCI 3482, ESCI 3492, or ESCI 4461; two of ESCI 4112 or ESCI 4212 or ESCI 4401, plus the following electives:

Electives

One ESCI elective at the 2000 level or above. Optional courses not used above may be used as electives.

Four elective courses from the Faculty of Arts (minimum of 12 ch)

Five free elective courses (minimum of 15 ch) from any Faculty or Department. Additional ESCI courses may be counted here up to a maximum of three courses.

All required and elective ESCI courses must be passed with a grade of C or better.

Geological Studies Program

Third and Fourth Year (64 ch minimum)

Eight courses of ESCI electives at the 2000 level or above (28 ch minimum)

Four elective courses from the Faculty of Arts (minimum of 12 ch)

Eight free elective courses (minimum of 24 ch) from any Faculty or Department. Additional ESCI courses may be counted here up to a maximum of three courses.

Students are encouraged to use their free electives for a Minor.

For graduation with an Honours degree in Geological Studies, students must additionally take ESCI 4900, achieving a grade of B- or higher. A minimum cumulative grade point average of 3.0 at graduation is required. Students failing to meet these requirements will be awarded a Major degree.

Co-op Program (Honours and Majors Only)

The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty through the Department of Earth Sciences, and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are available for qualified students, please refer to the Science section of this calendar for detailed information.

Note that field schools occur at the end of Winter Term in the second year and either at the end of term in the third year or before the start of Fall Term in the fourth year, so Work Terms must be carefully planned to graduate in a timely fashion.

Minor Program

The Department also offers a Minor in Earth Sciences following the University guidelines outlined in the online calendar. The minor must be pre-approved by the Director of Undergraduate Studies.

A Minor consists of first year earth sciences (ESCI 1001, ESCI 1006, ESCI 1026, ESCI 1012, ESCI 1017) and an additional 14 ch of approved earth sciences courses (total of 24 ch minimum).

Students whose programs require first year earth sciences courses may count these courses towards their minor. The student must get a grade of C or better in all courses used for the minor.

The Earth Sciences Minor does not meet the requirements for professional registration in New Brunswick.

Students in joint programs with the Department of Earth Sciences are not eligible for a Minor in Earth Sciences.

ECONOMICS OPTION

DEPARTMENT OF ECONOMICS

General Office:	Singer Hall, Room 465
Mailing Address:	Department of Economics, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4828
Fax:	(506) 453-4514
Email:	econ@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/economics/

For Bachelor of Arts Economics please see - Fredericton Degree Programs - Bachelor of Arts - Economics

FACULTY

- Chowdhury, Murshed, BSS, MSS (Shah Jalal), MA, PhD (Manit.), Assoc. Prof - 2016
- Dalkir, Elif, BSc (Mathematics-METU), MS (Bogazici), MA (Mathematics-Kansas), PhD (Economics & Mathematics – Kansas), Assoc. Prof - 2012
- Dalkir, Mehmet S., BS, MS (Engineering-METU), MA (Kansas), PhD (Kansas), Assoc. Prof - 2005
- Emery, Herbert, BA (Qu.), MA, PhD (British Columbia), Vaughan Chair & Director of Policy Studies Centre, Prof - 2016
- Farnworth, Mike, BA, MA (Qu.), PhD (McM), Assoc. Prof - 2000
- Lantz, Van, BA (Car.), MA (Dal), PhD (S.Fraser), Prof (Joint Forestry & Enviro Mgmt) - 2000
- Leonard, Philip, BComm (Queen's), MA (Ottawa), PhD (McMaster), Research Assoc and Health Economist with NB-IRDT - 2014
- McDonald, Ted, BA (St. F.X.), MCom, PhD (Melbourne), Prof - 2001
- Myatt, Anthony E., BA (Lancaster), MA, PhD (McM), Prof - 1983
- Passaris, Constantine E., BA (American U, Cairo), MA (Nfld), PhD (Leicester), Prof - 1972
- Yevdokimov, Yuri, BSc (Sumy), MA (Academy of Science), MSc (Ill), PhD (Manit.), Prof (Joint Civil Eng.) - 1999
- Yu, Weiqiu, BSc (Shandong), MA (UNB), PhD (S. Fraser), Prof - 1993

Programs available to Faculty of Science students include Majors, Honours and a Minor in Economics (see below), Major and Honours in Mathematics/Statistics-Economics. These programs can be found at BSc. Interdepartmental Programs.

Majors and Honours

Students are advised to carefully plan their selection and sequencing of foundation courses as each course is a prerequisite for higher level courses within the same subject area.

Students normally choose a major or Honours in the second year and should register with the Department at the beginning of the academic year. Registration forms may be obtained from the departmental secretary in SH465 or downloaded from the departmental website at: http://www.unb.ca/fredericton/arts/departments/economics/_resources/pdfs/minormajorhonoursform.pdf

Major in Economics

A Major will consist of 42 ch in Economics courses, 63 ch in other Science courses (including CS 1003 or CS 1073) and 21 ch of electives for a total of 126 ch. The following courses are compulsory for this program: ECON 1013, ECON 1023, ECON 3013, ECON 3023, ECON 4013, ECON 4023, ECON 3665, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CS 1003 or MATH 1073, STAT 3083, and STAT 3093. Course selection should normally conform to the following pattern:

First Year (36 ch minimum)

1. ECON 1013, ECON 1023, CS 1003 or CS 1073, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063
2. A total of 20 ch of first year science lecture and laboratory courses in two subject areas of Biology, Chemistry, Geology (Earth Sciences), and Physics

Second Year (30 ch minimum)

1. ECON 3013, ECON 3023, and 6 ch electives in Economics
2. Two additional courses of first year science lectures in the same subject area
3. STAT 3083, STAT 3093
4. 6 ch chosen from List A

NOTE: Students who did not take ECON 1013, 1023 in their first year may enter the program by taking these courses in their second year. They should consult the Undergraduate Director in Economics for course selections.

Third and Fourth Years (60 ch minimum)

1. ECON 4013, ECON 4023, ECON 3665
2. A minimum of additional 15 ch (advance level) in Economics
3. 21 ch of approved electives (at least 9 ch must be advanced level as defined by the relevant Department)

4. 15 ch chosen from List A (at least 6 ch must be at advanced level as defined by the relevant Department).

List A: Biology, Chemistry, Computer Science, Geology (Earth Sciences), Mathematics, Physics, Statistics.

Honours in Economics

The Honours program is designed mainly for persons who intend to become professional economists, particularly those who plan to do graduate work in Economics at UNB or some other universities. The program emphasizes economic theory, mathematical economics, mathematics and quantitative research methods.

Admission to the Honours Program is restricted to persons who have earned a grade of B or higher in ECON 1013 and ECON 1023 or MATH 1003 and MATH 1013 or their equivalences, and have a cumulative grade point average of at least 3.0. To remain in the Honours program, a student must maintain a grade point average of 3.0 in Economics courses and approved substitutes, with no grade lower than C in a required course. The Honours Program consists of 48 ch in Economics courses, 63 ch in other Science courses (including CS 1003 or CS 1073) and 15 ch of electives for a total of 126 ch. The following courses are compulsory for Honours students: ECON 1013, ECON 1023, ECON 3013, ECON 3023, ECON 4013, ECON 4023, ECON 4625, ECON 4665, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, MATH 2003, MATH 2013, MATH 2213, CS 1003 or 1073, STAT 3083, and STAT 3093. Course selection should normally conform to the following pattern:

First Year (36 ch minimum)

1. ECON 1013, ECON 1023, CS 1003, or CS 1073, MATH 1003 or 1053, MATH 1013 or 1063.
2. A total of 20 ch of first year science lecture and laboratory courses in two subject areas of Biology, Chemistry, Geology (Earth Sciences), and Physics.

Second Year (30 ch minimum)

1. ECON 3013, ECON 3023 and 6 ch electives in Economics
2. Two additional term courses of first year science lectures in the same subject area.
3. MATH 2003, MATH 2013, STAT 3083, STAT 3093

NOTE: Students who did not take ECON 1013, 1023 in their first year may enter the program by taking these courses in their second year. They should consult the Undergraduate Director in Economics for course selections.

Third and Fourth Years (60 ch minimum)

1. ECON 4023, ECON 4625, ECON 4665
2. MATH 2213
3. A minimum of 18 additional ch (advanced level) in Economics
4. 12 ch chosen from List A (at least 6 ch must be at advanced level as defined by the relevant Department)
5. 15 ch approved electives (at least 6 ch must be advanced level as defined by the relevant Department)

List A: Biology, Chemistry, Computer Science, Geology (Earth Sciences), Mathematics, Physics, Statistics.

Minor in Economics

A minor in Economics is available to Science students. It consists of at least 24 ch in Economics with a grade of 2.0 or better. For the minor up to 6 ch in statistics courses from other Departments may be treated as equivalent to Economics statistics and therefore counted as an Economics credit. The courses for the minor must be from a "coherent set of sequence of courses" as called for by the general university regulations for a Minor.

ENVIRONMENTAL BIOLOGY OPTION

PLEASE NOTE: ADMISSION TO THE ENVIRONMENTAL BIOLOGY OPTION HAS BEEN SUSPENDED EFFECTIVE MAY 1, 2015. FOR FURTHER INFORMATION PLEASE CONTACT THE CHAIR OF BIOLOGY.

The Environmental Biology Option is offered as an Honours or Major Program through the Department of Biology.

The Honours program requires the student to take a minimum of 150 credit hours, including 74 ch of Years I and II requirements, 44 ch of Years III and IV requirements (see below), and 32 ch of electives (which include a minimum of 12 ch of courses in the Faculty of Arts). A student must sustain a minimum CGPA of 3.0, and is eligible to apply for BIOL 4090 (Honours by thesis).

The Major program requires a minimum of 132 credit hours, with 69 ch of Years I and II requirements, 38 ch of Years III and IV requirements, and 25 ch of electives (including a minimum of 12 ch of course in the Faculty of Arts).

NOTE: Students must consult their Environmental Biology advisor for information about *Prerequisites*, electives, and program planning.

Year I (34 ch, same for both Honours and Majors programs)

1. MATH 1003 or MATH 1053 (3 ch), STAT 2264 (3 ch)
2. BIOL 1001, BIOL 1006, BIOL 1012 and BIOL 1017 (10 ch)
3. CHEM 1001, CHEM 1006, CHEM 1012 and CHEM 1017 (10 ch)
4. GEOL 1001, GEOL 1012 and GEOL 1017 (8 ch)

Year II (40 ch Honours, 35 ch Majors)

1. CHEM 2111 (5 ch, Honours program only)
2. Cell/Molecular module (10 ch) BIOL 2025, BIOL 2033, BIOL 2053
3. Ecology/Evolution module (10 ch) BIOL 2113, BIOL 2105, BIOL 2143
4. Organismal module (15 ch) BIOL 2073, BIOL 2083, BIOL 2093.

Years III and IV (44 ch Honours, 38 ch Majors minimum required plus electives)

1. BIOL 4863 (4 ch)
2. Two of ENVS 2003, ENVS 2023, ENVS 4001 or ENVS 4002 (6 ch)
3. One of BIOL 3801 (3 ch), BIOL 3521 (5 ch) or BIOL 3261 (3 ch)
4. One of BIOL 3173, BIOL 3383, BIOL 4443, or equivalent (4 ch)
5. Minimum 12 ch for Honours, 9 ch for Major from Group A courses (see below)
6. Minimum 15 ch for Honours, 12 ch for Major from Group B courses (see below)
7. Electives to bring total credit hours in Honours program to 150 ch, Majors 132 ch minimum.

NOTE: Credit for a course will only be counted once toward degree requirements.

Group A Courses (Plants and Microbes)
BIOL 3206 Advanced Microbiology Laboratory (4 ch)
BIOL 3261 Microbial Physiology (3 ch)
BIOL 3293 Population Genetics (4 ch)
BIOL 3301 Taxonomy of the Flowering Plants (5 ch)
BIOL 3423 Forest Tree Genetics and Genomics (3 ch)
BIOL 3441 Forest Ecology: Populations and Communities (5 ch)
BIOL 3521 Plant Function: Physiology and Primary Metabolism (5 ch)
BIOL 3541 Plant Ecology (5 ch)
BIOL 3633 Biological Oceanography (3 ch)
BIOL 3943 Hypothesis Testing in Biology (3 ch)
BIOL 4221 Diversity, Evolution and Ecology of Marine Plants (5 ch)
BIOL 4352 Climate Change and Environmental Response (3 ch)
BIOL 4413 Environmental Plant Physiology (3 ch)
BIOL 4423 Resource Conservation Genetics (3 ch)
ENR 3111 Estuary and Ocean Ecosystems (3 ch)

Group B Courses (Animals and Ecology)
BIOL 3113 Evolutionary Ecology (5 ch)
BIOL 3293 Population Genetics (4 ch)
BIOL 3602 Invertebrate Zoology (5 ch)
BIOL 3633 Biological Oceanography (3 ch)
BIOL 3703 Vertebrate Zoology (5 ch)
BIOL 3801 Animal Physiology (3 ch)
BIOL 3873 Ethology (3 ch)
BIOL 3883 Entomology (4 ch)
BIOL 3908 Laboratory Studies in Vertebrate Physiology (3 ch)
BIOL 3943 Hypothesis Testing in Biology (3 ch)
BIOL 4191 Wildlife Management (3 ch)
BIOL 4233 Conservation Biology (3 ch)
BIOL 4352 Climate Change and Environmental Response (3 ch)
BIOL 4641 Coastal Marine Ecology (5 ch)
BIOL 4723 Ornithology (5 ch)
BIOL 4732 Mammalogy (5 ch)
BIOL 4741 Fish Biology (2 ch)
BIOL 4746 Advanced Studies in Ichthyology (4 ch)
BIOL 4851 Ecology of Marine Birds (5 ch)
BIOL 4899 Population Analyses (3 ch)
BIOL 4991 Aquaculture in Canada (5 ch)
BIOL 4773 River and Lake Ecosystems (3 ch)
BIOL 5473 Experimental Design and Data Analysis in Biology and Forestry (3 ch)
ENR 4111 Fisheries and Aquatic Sciences Techniques (3 ch)
FOR 4602 Ecology and Forest Insects (3 ch)
FOR 4656 Wildlife: Scale and Forest Landscapes (3 ch)

ENVIRONMENTAL GEOSCIENCES OPTION

The Environmental Geocsciences Option is offered by the Department of Earth Sciences. Consult the Earth Sciences listing for contacts and Faculty.

This option provides students who have an interest in environmental science with the knowledge required to pursue careers or graduate studies in environmentally related geoscience fields, especially in areas related to water resources, contamination and remediation.

The Environmental Geosciences Option includes two programs Honours and Major. Within each program are two streams, the Hydrogeochemistry Stream and the Earth Systems Stream. Two required off-schedule field schools for the Major and Honours programs contribute 10 ch to the program totals. Both programs currently meet the academic knowledge requirements set by Geoscientists Canada for professional registration in the environmental geoscience stream (see Professional Registration in Earth Sciences listing for the calendar)

1. Honours Program (minimum of 152 ch): This program is recommended for students intending to pursue graduate studies in environmental geoscience, or whose goal is to become a

professional geoscientist. The program requires a thesis and a cgpa of over 3.0 at the time of entry (start of the student's final year). Honours students are not formally recognized as such until this time.
2. Major Program (minimum of 144 ch): This program is designed to meet the knowledge requirements for professional registration. It is the same as the honours program except it does not require a thesis.

Common Core
All students in the Earth Sciences and Environmental Geosciences options take a common core in the first two years of study.

First Year (36 ch minimum)
ESCI 1001, ESCI 1006 or ESCI 1026, ESCI 1012, ESCI 1017, SCI 1001 and SCI 1002, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017. The third science must also include the labs, either PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092, or BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017.
Any deficiencies in the first-year requirements must be made up in the second year.
PHYS 1071 and PHYS 1072 may be substituted for PHYS 1061 and PHYS 1062, but students are cautioned that they may not be accepted for professional registration in some provinces.

Second Year (39 ch minimum)
ESCI 2131, ESCI 2142, ESCI 2211, ESCI 2321, ESCI 2602, ESCI 2522, ESCI 2703, STAT 2264 or STAT 2593. Two science electives (8 ch minimum) chosen from the following:
PHYS 1061 and PHYS 1091 (count as one elective)
PHYS 1062 and PHYS 1092 (count as one elective)
BIOL 1001 and BIOL 1006 (count as one elective)
BIOL 1012 and BIOL 1017 (count as one elective)
MATH 1503 or MATH 2003
CS 1003 or CS 1073
CHEM 2121 or CHEM 2201 or CHEM 2321 or CHEM 2401 or CHEM 2421

First year physics or biology must include lecture and lab. Courses used to satisfy first year requirements cannot be used to meet this requirement. Students intending to take a professional stream must take a full year of physics (PHYS 1061/ PHYS 1062/ PHYS 1091/ PHYS 1092) and at least one term of Biology (BIOL 1001/ BIOL 1006) in either the first or second year. Other sciences may be taken with the approval of the Director of Undergraduate Studies.

At the end of the winter term of the second year, students must chose an option and program stream. Because many third and fourth year courses are offered in alternate years, students must consult with the Director of Undergraduate Studies when planning their program in order to graduate in a timely fashion.

Honours Program
Entrance to the Environmental Geosciences Honours Program requires a cumulative grade point average of at least 3.0 overall, by the end of the third year. The student must have completed all first and second year requirements and at least 20 ch of earth science requirements for their stream. An application for admission to the Honours program, available from the Director of Undergraduate Studies, must be submitted by the last day to add classes of the fall term of the fourth year. Students not admitted to the Honours Program may continue in the Major Program. For graduation with an Honours degree, a minimum cumulative grade point average of 3.0 and a grade of B- or higher in ESCI 4900 are required. Students failing to meet these requirements will be awarded a Major degree.

Third and Fourth Year (77 ch minimum)
ESCI 2022, ESCI 3442, ESCI 3631, ESCI 3713, ESCI 4401, ESCI 4512, one of ESCI 3482 or ESCI 3492, ESCI 4900, one set of the stream requirements plus the following electives:

Hydrogeochemistry Stream
ESCI 4452, GE 5753 plus 2 elective ESCI courses (6 ch minimum)

Earth Systems Stream
ESCI 3271, ESCI 3282, ESCI 3292, and one ESCI elective (3 ch minimum)

Electives
Four elective courses from the Faculty of Arts (minimum of 12 ch)
Three courses at the 2000 level or above (9 ch minimum) from Biology, Chemistry or Environmental Studies that form a coherent group.
Two free elective courses (minimum of 6 ch) from any Faculty or Department.

Major Program
Third and Fourth Year (69 ch minimum)
ESCI 2022, ESCI 3442, ESCI 3631, ESCI 3713, ESCI 4401, ESCI 4512, one of ESCI 3482 or ESCI 3492, one set of the stream requirements plus the following electives:

Hydrogeochemistry Stream
ESCI 4452, GE 5753 plus 2 elective ESCI courses (6 ch minimum)

Earth Systems Stream
ESCI 3271, ESCI 3282, ESCI 3292, and one ESCI elective (3 ch minimum)

Electives

Four elective courses from the Faculty of Arts (minimum of 12 ch
Three courses at the 2000 level or above (9 ch minimum) from Biology, Chemistry or Environmental Studies that form a coherent group.
Two free elective courses (minimum of 6 ch) from any Faculty or Department.

Co-op Program
The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty through the Department of Earth Sciences, and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are available for qualified students, please refer to the Science section of this calendar for detailed information.

Minor Program
The Department does not offer a Minor in Environmental Geosciences. Students may take a minor in Earth Sciences with a suitable choice of courses in environmental geoscience. Consult with the Director of Undergraduate Studies.

MATHEMATICS AND STATISTICS OPTIONS

DEPARTMENT OF MATHEMATICS AND STATISTICS

General Office:	Tilley Hall, Room 418
Mailing Address:	Department of Mathematics and Statistics, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4768
Fax:	(506) 453-4705
Email:	math@unb.ca
Website:	http://www.unb.ca/academics/programs/science/mathematics-and-statistics.html

FACULTY

- Bremner, David, BSc (Calg), MSc (S. Fraser), PhD (McG), Prof (Cross Appt - Computer Science) - 2000
- Ćaćić, Branimir, BSc (Tor), PhD (Caltech), Assoc Prof - 2016
- Campbell, H.E.A. Eddy, BSc, MSc (MUN), PhD (Tor), Prof - 2009
- Hasan, M. Tariq, BSc, MSc (Dhaka), MSc, PhD (MUN), Prof - 2006
- Husain, Viqar, BSc (Manc), PhD (Yale), Prof - 1999
- Ingalls, Colin, BSc (Dal), PhD (MIT), Adjunct Prof - 2000
- Kucerovsky, Dan, BSc (W Ont), DPhil (Oxon), Prof - 1999
- Ma, Renjun, BS, MSc (Wuhan), PhD (UBC), Prof - 2000
- Mason, Gordon R., BSc (Bishop's), MSc, PhD (McG), Prof Emeritus - 1969
- McLoughlin, John, BMath (Wat), MSc Teaching (Tor), PhD (SUNY Buffalo), Prof (Cross Appt - Education) - 2002
- Monson, Barry R., BSc (Sask), MSc, PhD (Tor), Prof Emeritus - 1979
- Picka, Jeffrey, BASc, BSc, MSc (Tor), PhD (Chicago), Assoc Prof - 2003
- Purdy, Caroline, BA, MSc, BEd (UNB), Sr Teaching Assoc - 2001
- Rangipour, Bahram, BSc (Isfahan UT), MSc (Isfahan), PhD (W. Ontario), Prof - 2007
- Reynolds, A. Patrick, BA (St. FX), MSc, PhD (Queen's), Sr Inst - 2013
- Salmani, Mahin, BSc (Isfahan), MSc (U Vic), MS (Ohio St), Sr Inst - 2008
- Sankey, Alyssa, AB (Vassar), MSc, PhD (Michigan), Sr Teaching Assoc - 2006
- Seahra, Sanjeev, BSc, PhD (Wat), Prof and Chair - 2010
- Tasic, Vladimir, BSc (Novi Sad, Yugoslavia), PhD (Manit), Prof - 1995
- Thompson, Jon, BSc (UNB), MA, PhD (Tor), Prof Emeritus – 1970
- Touikan, Nicholas, W. M.,BSc, PhD (McG), Asst Prof - 2018
- Tupper, Brian O.J., BSc, PhD, DSc (Lond), FIMA, Prof Emeritus - 1969
- Wang, Lin, BSc, MSc (Hunan), PhD (MUN), Prof - 2007
- Watmough, James, BASc, MSc, PhD (UBC), Prof - 2000
- Wilson-Ewing, Edward, BSc (Bishop's), PhD (Penn State), Asst Prof - 2017
- Yan, Guohua, BSc (Liaocheng), MSc (Windsor), PhD (UBC), Assoc Prof – 2008

General Information
The Department of Mathematics and Statistics offers Honours and Majors BSc and BA degrees in Mathematics and in Statistics. Requirements for the BA degrees are available from the Department. Minors are also offered.

Mathematics Option
Introductory Level Courses
Introductory Mathematics courses are organized into the following sequences:

1. MATH 1003 and MATH 1013, Introduction to Calculus I and II (or MATH 1053 and MATH 1063): these courses are required for a

degree in Mathematics or Statistics and are *Prerequisites* for intermediate and upper-level courses in Mathematics and Statistics. Students who intend to pursue a degree in Mathematics or Statistics should take these courses in their first year. Grade 12 Mathematics is the normal prerequisite.

2. MATH 1823 and MATH 1833, Mathematics for Management Sciences I and II: this sequence provides a mathematical background for quantitative work in Business Administration and in the social sciences. These courses do not provide the preparation for most intermediate and upper-level courses in Mathematics and Statistics.

Minors Program
The Minor in Mathematics consists of 24 ch in Mathematics courses. Credit must be obtained for MATH 1003 (or MATH 1053), MATH 1013 (or MATH 1063), and either MATH 1503 or MATH 2213. The remaining 15 ch of the minor must consist of Mathematics courses at the second year level or above. A maximum of 6 ch of Statistics may count towards the 15 ch. A minimum of 6 ch must be at the third year level or above. Students majoring in Statistics and wishing to minor in Mathematics must consult both the Mathematics and Statistics advisors.

Minor in Financial Mathematics
For a minor to be designated Financial Mathematics the courses taken by a student must satisfy the requirements for the Mathematics Minor, as listed above, and must include: MATH 2003 or MATH 2513, MATH 3803, two of MATH 3813, MATH 3843 or MATH 4853; and STAT 2593 or STAT 2264, or both of STAT 3083 and STAT 3093. Other recommended courses are MATH 2013, MATH 3043, MATH 3703, and MATH 3373.

Minor in Computational Mathematics
For a minor to be designated Computational Mathematics the courses taken by a student must satisfy the requirements for the Mathematics Minor, as listed above, and must include: MATH 2003 or MATH 2513, MATH 3003, MATH 3073, MATH 3353, MATH 3413, MATH 4503. Other recommended courses are MATH 3343, MATH 3473, MATH 3043, MATH 3243, and MATH 4853.

Certificate in Actuarial Studies
The primary objective of the Certificate is to prepare students at UNB for a career in the actuarial profession. Professional qualification in the actuarial profession is contingent on passing a series of examinations administered by the Canadian Institute of Actuaries and on passing university courses in five specialized topics, known as Validation by Educational Experience or VEE courses. The Certificate will require that the five VEE courses be taken, and will also require courses that help the student prepare for the first three professional examinations.

Admission to the Certificate in Actuarial Studies program requires admission into a major or honours program in Mathematics, Statistics, Economics, or Business Administration at UNB, or permission of the program administrator.

The Certificate requires the successful completion (with a grade of B- or higher) of nine (9) courses, totaling twenty-seven credit hours, which shall include the following: ADM 1213 (VEE), ADM 3415 (VEE), ECON 1013 (VEE) or 3013 (VEE), ECON 1023 (VEE) or 3023 (VEE), MATH 3803 (E), MATH 3843 (E), STAT 3083 (E) or 2593 (E), STAT 3093.

Courses indicated with an E are courses that prepare the student for the first three actuarial exams. *Prerequisites* for these courses may require additional course work outside of the student's major or honours program. Students considering an actuarial career are strongly urged to consider taking CS 1003 or CS 1073, STAT 4053, and STAT 4443.

If the student passes SOA Exam FM or CAS Exam 2 before graduating, the Math 3803 will not be required for the Certificate. If the student passes SOA Exam MLC or CAS Exam 3L before graduating, then MATH 3843 will not be required for the Certificate.

To be awarded the Certificate, a minimum of eighteen (18) credit hours must be completed at UNB. Subject to approval by the Dean of Science, a maximum of nine (9) credit hours (or the equivalent) of comparable coursework may be transferred from another recognized post-secondary institution.

Mathematics Degree Program
The Mathematics major degree is designed to prepare students for careers in industry, government or education. Mathematics students are urged to obtain some expertise in an area of application such as the physical sciences, computer science, engineering or business.

General Requirements
STAT 3083, STAT 3093 and at least one approved Computer Science term course are required courses for all Mathematics degrees. CS 1003 or CS 1073 is strongly recommended. CS 2525 and CS 1043 will not be approved.

First Year
First year required courses are listed under the BSc general regulations. MATH 1013 or MATH 1063 must be included. Suggested electives are MATH 2213, MATH 2203 or CS 1303, and CS 1073, CS 1083.

Second Year
MATH 2003, MATH 2013, MATH 2203, MATH 2213, and approved electives equivalent to 6 courses with a minimum of 3 ch each.

Third and Fourth Years

Students normally choose an Honours or a Majors degree in the Third Year. Students must apply to the Department Chair for admission to the Honours program. The Honours degree is the normal prerequisite for graduate study in the mathematical sciences. However, unless the undergraduate program is chosen carefully, a student may have to take certain undergraduate courses before entering or as part of their graduate program. Students with a Majors degree generally will be required to complete a qualifying year before being admitted to graduate study. All Mathematics Majors and Honours students must have their course selections approved by the Department.

Honours Program

1. MATH 3033, MATH 3213, MATH 3243, MATH 3103, MATH 3113, MATH 4100 (normally taken in fourth year), and at least five other 3000-4000 level Mathematics term courses including at least one 4000 level term course, totalling at least 36 ch. STAT 3303 and STAT 3313 may count as Mathematics courses for this requirement.
2. STAT 3083, STAT 3093 and an additional 15 ch are required in approved 3000-4000 level courses selected from Science (excluding Mathematics but including Statistics), Arts, Business Administration, Computer Science, or Engineering
3. Two other approved electives with a minimum of 3 ch each.
4. A total of 132 ch is required to complete the degree.

For the award of a first-class Honours degree, in addition to the Science Faculty general regulations, a grade point average of 3.5 is required in 3000-4000 level Mathematics courses; this average is calculated on the minimum number of specified Mathematics courses as stated in 1 above. Credit hours obtained above the minimum will not be used in calculation of the average.

Majors Program

1. MATH 3003, MATH 3213, MATH 3033, MATH 3243, and at least five 3000-4000 level Mathematics term courses, totaling at least 27 ch. STAT 3303 and STAT 3313 may count as Mathematics courses for this requirement.
2. STAT 3083, STAT 3093, and an additional 15 ch are required in approved 3000-4000 level courses selected from Science (excluding Mathematics but including Statistics), Arts, Business Administration, Computer Science, or Engineering. A maximum of 6 ch from a list of approved Education courses may be included. At least 9 ch must be taken from one coherent field of study, excluding Statistics.
3. Four other approved electives with a minimum of 3 ch each.
4. A total of 129 ch is required to complete the degree.

Co-Op Program

The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through the Department of Mathematics and Statistics and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are sometimes available to qualified students. Please refer to the Science section of the calendar for detailed information. Students must take STAT 3083 and STAT 3093 in their second year to be eligible for this program.

Statistics Option
Introductory and Service Courses

In addition to degree programs in Statistics, the Department of Mathematics and Statistics offers a number of courses, both introductory and upper level, aimed at non-specialists whose discipline requires them to obtain some knowledge of statistics. The introductory courses are: STAT 2253, STAT 2263, and STAT 2264 (prerequisite Grade 11 Mathematics), and STAT 2593 (prerequisite MATH 1013).

Minors Program

The Minor in Statistics consists of 24 ch in Statistics and Mathematics courses. Credit must be obtained for MATH 1003 or MATH 1053, and MATH 1013 or MATH 1063, and either MATH 1503 or MATH 2213. The remaining 15 ch of the minor must consist of Statistics courses at the second year level or above. (MATH 3843 or MATH 3373 may be counted as a Statistics course). Students majoring in Mathematics and wishing to minor in Statistics must consult both the Mathematics and Statistics advisors.

Statistics Degree Program
General Information

The degree programs in Statistics are designed to prepare students for careers in industry or government as well as to provide a background for graduate study. Statistics students are required to obtain expertise in an area of application such as the applied sciences, economics or psychology. Consequently, all upper level electives must be approved by the undergraduate faculty advisor.

The courses STAT 3083 and STAT 3093 form the core of the Statistics degree programs. These courses are *Prerequisites* for most of the upper year Statistics courses. It is strongly recommended that students take these courses in second year to facilitate flexibility of their programs in third and fourth years.

Students who have an interest in, or who are preparing for future careers which involve the design and implementation of statistical algorithms, are strongly encouraged to take MATH 3003 and MATH 3413 or CS 3113. Students interested in data science should consider taking CS 1073, CS 1083, and CS 2545.

The Honours degree is the normal prerequisite for graduate study in Statistics. Students with a Majors degree generally will be required to complete a qualifying year before being admitted to graduate study.

Majors Program

The basic structure of the majors program is as follows:
First year requirements

As specified by the Science Faculty regulations.
MATH 1013 or MATH 1063 must be included.
General Requirements

i. At least 4 ch of approved Computer Science courses. CS 2525 and CS 1043 will not be approved.
ii. A total of 129 ch, of which at least 48 ch must be at the 3000 level or above. These credit hours include those specified below; the balance is to be made up of approved electives.

Application Elective Requirements

At least 16 ch of approved courses in a field where statistics is applied at the 2000 level or above, taken outside the Department of Mathematics and Statistics. At least eight of these credit hours must be at the 3000 level or above.
Second Year Course Requirements

MATH 2003, MATH 2013, MATH 2213, STAT 3083, and STAT 3093. Students are strongly encouraged to take a second year applications course (outside Mathematics & Statistics) in their second year in order to make sure they have the *Prerequisites* for Third Year Science electives.
Third and Fourth Year Course Requirements

i. STAT 3083 and STAT 3093. (**NOTE**: These courses may be taken in second year.)
ii. At least 21 more credit hours of approved 3000-4000 level Statistics courses, giving a total of 27 ch of Statistics courses at the 3000 level or above. Up to 12 ch chosen from MATH 3003, MATH 3043, MATH 3103, MATH 3113, MATH 3373, MATH 3413, MATH 3473, MATH 3803, MATH 3813 and MATH 3843 may count as STAT courses for this requirement.

Honours Program

Students normally choose between an Honours or Majors degree in Third Year. They must apply to the Department Chair for admission to the Honours program.

For the award of a first-class Honours degree, in addition to the Science Faculty general regulations, a grade point average of 3.5 is required in 3000-4000 level statistics courses. This average is calculated on the basis of the courses, meeting the minimum requirements specified in (i), (ii), and (iii) below, in which the student has the highest marks.
The basic structure of the Honours program is as follows:
First Year Course Requirements:
General requirements:

i. As for the Majors program.
ii. A total of 132 ch, of which at least 63 must be at the 3000 level or above. These credit hours include those specified below; the balance is to be made up of approved electives.

Application Elective requirements:

As for the Majors program.
Second Year Course Requirements:

As for the Majors program, plus MATH 2203.
Third and Fourth Year Course Requirements:

A total of 42 ch of approved STAT and MATH courses at level 3000-4000, with more ch in STAT than in MATH. These ch must include the following:

i. At least 15 ch of STAT at 4000 level, including STAT 4100.
ii. MATH 3103, at least one of MATH 3003, MATH 3113, at least one of MATH 3033, MATH 3043, MATH 3243.

Co-Op Program

The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty, through the Department of Mathematics and Statistics and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are sometimes available to qualified students. Please refer to the Science section of this calendar for detailed information. Students must take STAT 3083 and STAT 3093 in their second year to be eligible for this program.

PHYSICS OPTION

DEPARTMENT OF PHYSICS

General Office:	I.U.C - Physics & Administration Building, Room 206/209

Mailing Address:	Department of Physics, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4723
Fax:	(506) 453-3570
Email:	physics@unb.ca
Website:	http://www.unb.ca/fredericton/science/depts/physics/

FACULTY

- Adam, Allan G., BSc, MSc (UWO), PhD (Wat), Prof (Cross Appt - Chemistry) - 1991
- Backman, Philip J., BSc (Dal), MSc (UND), Teaching Prof - 2004
- Balcom, Bruce, BSc (Mt.All.), PhD (UWO), Prof (Cross Appt - Chemistry) & Canada Research Chair -1993
- Barrett, Brynle, BSc (SMU), PhD (York), Asst Prof - 2021
- Benton, J. Bruce, BSc, MSc (UNB), Teaching Prof -1983
- Ghosh, S.N., BSc (Calc), MSc (Calc & Nfld), PhD (UNB), Teaching Assoc Prof - 1978
- Hamza, Abdelhaq, BSc (Algiers), MSc, PhD (MIT), Prof - 1995
- Husain, Viqar, BSc (Manchester), PhD (Yale), Prof (Cross Appt - Math & Stat)- 1999
- Jayachandran, P. T. BSc (Calicut), MSc (Andhra), PhD (Andhra), Prof and Chair - 2005
- Mastikhin, Igor, MSc, PhD (Novosibirsk State), Prof - 2002
- Newling, Benedict, BA, PhD (Camb.), Prof - 2002, Asst Dean - 2019
- Normandeau, Magdalen, BSc, MSc (Laval), PhD (Calgary), Teaching Prof - 2005
- Seahra, Sanjeev, BSc, PhD (Waterloo), Prof (Cross Appt - Math & Stat) - 2010
- Tokaryk, Dennis, BSc (Sask), MSc (Guelph), PhD (Guelph), Prof - 2002
- Ward, William, BSc (UWO), PhD (York), Prof - 2001
- Wilson-Ewing, Edward, BSc, (Bishops), PhD (Penn. State), Asst Prof - 2017
- Yan, Zong-Chao, BSc (Shanghai Teachers U.), MSc (Tongji), MSc (Nfld), PhD (Windsor), Prof - 1999
- Zhao, Saibei, BSc (Zhong Shan Univ.), MSc (Beijing U. E. D. Research Inst.), PhD (UNB), Teaching Prof - 2000

General Information

Programs are offered at four different levels:

1. **Honours:** These programs are designed primarily for qualified students intending to pursue a post graduate education. In general, the Honours programs require more specialization and a greater overall course load than the Major programs. A Co-op program is available.
2. **Major:** The Major programs allow a wider choice of courses outside the Physics Department and a somewhat reduced course load.
3. **Pass:** A Pass degree is intended for students who require a basic foundation in Physics to undertake further study in another area (such as X-ray technology, medical imaging technology, etc.) It has fewer requirements than a Major in Physics.
4. **Minor:** A Minor in Physics consists of first year physics (PHYS 1061, 1062, 1091, 1092 or equivalent) plus at least a further 14 ch of approved physics courses (at least 24 ch of physics courses in total).

A student may do a Major, Honours or Honours Co-op program in Physics or Applied Physics.

Students entering second year from Engineering must complete the requirements of First Year of their physics program before graduation. CHEM 1982 may replace CHEM 1012 and CHEM 1987 may replace CHEM 1017. **NOTE** that students must take CHEM 1001 and 1006. PHYS 1081 and EE 1813 may replace First Year Physics i.e. PHYS 1051, PHYS 1052, PHYS 1091, PHYS 1092 (or equivalently PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or PHYS 1071, PHYS 1072, PHYS 1091, PHYS 1092).

The Applied Physics program is not an Engineering program and does not satisfy the requirements for a PEng qualification.

Honours Program

A student intending to take Honours should consult with the undergraduate advisor in physics.

All students in Honours Programs are required to complete an Advanced Research Project (PHYS 4338). Students must have arranged with the Department for an appropriate project by October of their final year and must submit a report to the Department. The deadline for the report is decided and circulated each year, but is usually late in March.

To remain in and graduate in Honours, the student must meet certain minimum standards in the course work beyond second year.

1. In each **term** of study beyond second year, the student must have a GPA of at least 3.0 calculated from the grades of the courses taken that term.

2. The student must have a minimum GPA of 3.0 in the required upper level physics courses and a minimum grade of B- in PHYS 4338.

When students apply to graduate with Honours, records will be checked for compliance with 1 and 2 above. In the event a student does not meet requirements he/she may request permission from the department for an exception of standards 1 and/or 2 above. Students offering all the courses necessary for the Honours program but failing to meet the qualifications outlined in 1 and 2 above will receive Major degrees, subject to general university regulations for graduation.

Honours Physics

Elective courses listed below total a minimum of 36 ch (of which 18 ch must be physics courses) for the Honours degree.

First Year:
PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091, PHYS 1092, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017 plus two more term lecture courses chosen from BIOL 1001, BIOL 1012, ESCI 1001, ESCI 1012, plus 6 ch of electives.
NOTE: Students are reminded that to go into the second year of any PHYSICS program, they must have completed MATH 1013 or 1063, since second year math must be taken with the second year physics courses.

Second Year:
PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2341, PHYS 2351, PHYS 2372, MATH 2003, MATH 2013, MATH 2213, CS 1073, plus approved physics electives totalling 3 ch.

Third Year:
PHYS 3331, PHYS 3332, PHYS 3336, PHYS 3338, PHYS 3342, PHYS 3351 plus additional approved physics electives totaling at least 9 ch, plus MATH 3243, plus MATH 3413 or CS 3113 or equivalent, plus approved electives totaling at least 6 ch.

Fourth Year:
PHYS 4321, PHYS 4332, PHYS 4351, PHYS 4371, PHYS 4338, plus approved physics electives totalling at least 6 ch, plus STAT 3083, plus additional approved electives totalling at least 6 ch.

Physics Major

Electives courses listed below total a minimum of 48 ch (of which 21 ch must be physics courses) for the Major degree:

First Year:
PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091, PHYS 1092, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CHEM 1001, 1006, CHEM 1012, CHEM 1017 plus two more term lecture courses chosen from BIOL 1001, BIOL 1012, ESCI 1001, ESCI 1012, plus 6 ch of electives.
NOTE: Students are reminded that to go into the second year of any PHYSICS program, they must have completed MATH 1013 or MATH 1063, since second year math must be taken with the second year physics courses.

Second Year:
PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2351, MATH 2003, MATH 2013, MATH 2213, CS 1073, plus approved physics electives totaling at least 3 ch plus approved electives totaling at least 3 ch.

Third and Fourth Years:
PHYS 2341, PHYS 2372, PHYS 3322, PHYS 3331, PHYS 3336, PHYS 3342, PHYS 3351, PHYS 4332, MATH 3243, MATH 3413 or CS 3113 plus approved physics electives totaling at least 18 ch plus approved electives totaling at least 18 ch.

Make-Up Year:
Physics Major students who decide to prepare themselves for graduate studies in Physics at UNB might be required to take a further year of study composed of the following: PHYS 4321, PHYS 4351, PHYS 4371, PHYS 4338, and STAT 3083 and 3 ch Math/Stats electives + 9 ch of approved electives.

Applied Physics Program (Honours or Majors)

First Year:
PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091, PHYS 1092, MATH 1003, MATH 1001, ESCI 1012, plus 6 ch of electives.
NOTE: Students are reminded that to go into the second year of any PHYSICS program, they must have completed MATH 1013 or 1063, since second year math must be taken with the second year physics courses.

Second Year:
PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2341, PHYS 2351, PHYS 2372, MATH 2003, MATH 2013, MATH 2213, CS 1073.

Third and Fourth Years:
PHYS 3322, PHYS 3331, PHYS 3336, PHYS 3342, PHYS 3351, PHYS 4321, PHYS 4332, PHYS 4338, PHYS 4351, PHYS 4371, PHYS 4723, PHYS 4823, MATH 3243, MATH 3413 or CS 3113 or equivalent, an approved course in Statistics plus approved electives which should include engineering and/or computer science courses totaling at least 24 ch.

Electives may be chosen to prepare the student for specialization in various aspects of applied Physics.

NOTE: In choosing electives students must ensure that they satisfy prerequisite requirements for desired electives.

Physics Co-op Program

The UNB Faculty of Science seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty through the Department of Physics, and other Science departments and programs, operates a Co-operative education program. Co-op opportunities are available for qualified students, please refer to the Science section of this calendar for detailed information.

Pass Program

A pass degree is intended for students who require a basic foundation in Physics to undertake further study in another area (such as X ray technology, medical imaging technology, etc.). The requirements are those of second year Honours Physics plus at least 30 ch of approved physics electives plus a minimum of 15 ch of approved electives. A minimum of 126 credit hours are required for graduation.

PSYCHOLOGY OPTION

DEPARTMENT OF PSYCHOLOGY

General Office:	Keirstead Hall, Room 119
Mailing Address:	Department of Psychology, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4707
Email:	psyc@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/ psychology/index.html

FACULTY

- Byers, E. Sandra, BA (Roch), MA, PhD (W Virginia), Prof & Chair - 1978
- D'Entremont, Barbara, BSc, MSc (Dal), PhD (Qu), Assoc. Prof - 2000
- Hamilton, Ryan, BA, MSES, PhD (UNB), Assoc Prof - 2013
- LaChapelle, Diane, BSC (McM), MA, PhD (Regina) - Assoc Prof - 2002
- Olthuis, Janine, BA (Smith), PhD (Dal), Assoc Prof - 2016
- O'Sullivan, Lucia, BA, MA (UNB), PhD (Bowl) Prof – 2006
- Palmer, Michael, BS, MS, PhD (Central Michigan), Asst Teaching Prof - 2017
- Perunovic, W. Q. Elaine, BA, PhD (Wat.) Assoc Prof - 2007
- Poulin, Carmen, BA (UNB), MA, PhD (Qu), Prof - 1991
- Ronis, Scott,(Brandeis), MA, PhD (Missouri), Prof-2009
- Sears, Heather, BSc (Acad.), MA, PhD (Victoria), Prof - 1995
- Stevanovski, Biljana, BA (McM), MA, PhD (Wat), Assoc Prof - 2007
- Voyer, Daniel, BSc, MSc (Montr.), PhD (Wat.), Prof - 2000
- Whitford, Veronica, BA, PhD (McGill), Asst. Prof - 2019

General Information

The Department of Psychology offers several undergraduate programs through the Faculty of Arts and the Faculty of Science. Arts students may complete Minors, Majors, Double Majors, Honours, Joint Honours and Specialization in Neuroscience programs. Science students may complete Minors, Majors or Honours in Psychology. Some students may complete degrees in a combined (BASc) program or earn both Arts (BA) and Science (BSc) degrees in a concurrent program. Students in the concurrent program may declare the Major or apply for admission to Honours in Psychology in either Faculty but not both. Students in the combined program may declare the Major (following the Double Major regulations) in Psychology in either Faculty but not both.

The second digit in each course number indicates Teaching Areas within the discipline of psychology. The Areas and the specific course numbers of the courses belonging to each Area are as follows:

0 General PSYC 1013, PSYC 1023, PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063, PSYC 4003, PSYC 4053;

1 Research PSYC 2103, PSYC 2113, PSYC 3113, PSYC 3123, PSYC 3151, PSYC 3152, PSYC 4110;

2 Developmental PSYC 2203, PSYC 3213, PSYC 3215, PSYC 3233, PSYC 3243, PSYC 3253, PSYC 3263, PSYC 3273, PSYC 4203, PSYC 4223;

3 Clinical PSYC 2313, PSYC 3313, PSYC 3315, PSYC 3323, PSYC 3353, PSYC 3373, PSYC 3383, PSYC 4303;

4 Personality and Social PSYC 2403, PSYC 3403, PSYC 3415, PSYC 3423, PSYC 3433, PSYC 4403;

6 Memory, Learning and Cognition PSYC 2603, PSYC 2613, PSYC 3613, PSYC 3623, PSYC 3633, PSYC 3643, PSYC 4603;

7 Biological PSYC 2703, PSYC 3713, PSYC 3723, PSYC 3733, PSYC 3743, PSYC 3745, PSYC 3753, PSYC 3773, PSYC 3783, PSYC 4713, PSYC 4743, PSYC 4773.

The third digit in each course number designates the course within the Subject Area. Terminal digits of 3 or 5 indicate the course could be offered in any term. Please note that no more than three of PYSC 3033, PYSC 3043, PSYC 3053, and PSYC 3063 may be counted toward a Major or Honours in Psychology.

Statement of Web Courses

The Department of Psychology offers some online Web Courses to students through the College of Extended Learning. The Department of Psychology has approved these courses as equivalent to regular courses. In the Undergraduate Timetable, the section number for all Web Courses is listed as Open Access Learning.

In exceptional cases Full-time students may be given permission to enrol in Web Courses as part of their regular course load. Current regulations require Web courses taken by Full-time students during the Winter and Fall terms to be approved by the Dean of the faculty offering the course. Web Courses must be on the list of courses approved by the Department as equivalent to existing courses and must include a proctored final exam. The following Web Courses have been approved by the Department of Psychology as equivalent to regular courses:

PSYC 1013	Introductory Psychology on the WEB - 1	3 ch (online)
PSYC 1023	Introductory Psychology on the WEB - 2	3 ch (online)
PSYC 2203	Foundations of Developmental Psychology	3 ch (online)
PSYC 2313	Foundations of Clinical Psychology	3 ch (online)
PSYC 2403	Foundations in Social Psychology	3 ch (online)
PSYC 2603	Foundations of Memory and Cognition	3 ch (online)
PSYC 2613	Foundations of Learning	3 ch (online)
PSYC 2703	Foundations of Biological Psychology	3 ch (online)
PSYC 3213	Language Development	3 ch (online)
PSYC 3663	Applied Behaviour Analysis	3 ch (online)
PSYC 3673	Advanced ABA	3 ch (online)

Majors and Honours

Minimum Academic Standards

Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.

Students are advised to carefully plan their selection and sequencing of Foundation courses as each course is a prerequisite for higher level courses within the same Teaching Area.

Normally, course selection for each program should conform to the following pattern:

First Year

1. PSYC 1013, PSYC 1023; BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003 or MATH 1053, and one of MATH 1013, MATH 1063 or PSYC 3113 (PSYC 3113 would be taken in Year 3 or 4).
2. 6 ch of approved electives (9 ch of electives in Year 1 if PSYC 3113 is selected in lieu of MATH 1013).

Second Year

1. PSYC 2113, PSYC 2103.
2. Two term courses of first year science lectures (Earth Sciences or Physics).
3. PSYC 2603, PSYC 2703 and 12 ch chosen from List A.

Third and Fourth Years

1. PSYC 4053
2. Two of: PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515 (ideally taken in Fall of year 3), PSYC 3113 (if taken in lieu of MATH 1013 or MATH 1063).
3. 24 ch of Advanced Psychology electives (excluding PSYC 3113 if taken in lieu of MATH 1013 or MATH 1063).
4. 12 ch chosen from List A (6 ch must be at advanced level).
5. 15 ch of approved electives.

List A: Biology, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics, Statistics.

Minor Program

A Minor will consist of 24 ch in Psychology courses and will include the following:

- PSYC 1013, PSYC 1023, PSYC 2103,
- two Foundation courses (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2603, PSYC 2515 and PSYC 2703), and
- three advanced level (3xxx or 4xxx) Psychology courses.

Major Program

Students wishing to Major in Psychology will normally declare their major during their second year after they have seen their Department advisor. A Major will consist of 51 ch in Psychology courses, 50 ch in other Science courses, 6 ch for the Math requirement, and 21 ch of elective for a total of 128 ch.

A Major in Psychology will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2113 and PSYC 2103)
- Area 6 and 7 Foundation courses 6 ch (PSYC 2603 and PSYC 2703)
- Two general Foundation courses 6 ch (selected from PSYC 2203, PSYC 2313, and PSYC 2403)
- Four advanced level Area 6 or Area 7 Psychology courses 12 ch (3xxx or 4xxx level)
- Four general advanced level Psychology courses 12 ch (3xxx or 4xxx level chosen from any area of Psychology, excluding PSYC 3113 if taken in lieu of MATH 1013 or MATH 1063).
- History of Psychology 3 ch (PSYC 4053)
- Biology 10 ch (BIOL 1001, BIOL 1006, BIOL 1012, and BIOL 1017)
- Mathematics 6 ch (MATH 1003 or MATH 1053; and one of MATH 1013, MATH 1063, or PSYC 3113).
- Chemistry 10 ch (CHEM 1001, CHEM 1006, CHEM 1012, and CHEM 1017)
- 6 ch in PHYS 1061/PHYS 1071, PHYS 1062 / PHYS 1072, ESCI 1001 or ESCI 1012.
- List A Science Courses 18 ch (Any level (i.e. 1xxx, 2xxx, 3xxx, or 4xxx) from Biology, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics, or Statistics), and
- List A Advanced Science Courses 6 ch (3xxx or 4xxx) from Biology, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics, or Statistics), and
- Electives 21 ch (any level from any discipline)

Honours Program

Students wishing to Honour in Psychology will normally apply to the Department in their third year. The Honours Program is designed to provide broad exposure to the discipline and develop research skills appropriate for students wishing to pursue graduate studies in Psychology.

An Honours will consist of 60 ch in Psychology courses, 50 ch in other Science courses, 6 ch for the Math requirement, and 12 ch of electives for a total of 132 ch. An Honours in Psychology will include the following:

- Introductory Psychology 6 ch (PSYC 1013 and PSYC 1023)
- Research Methods 6 ch (PSYC 2113 and PSYC 2103)
- Area 6 and 7 Foundation courses 6 ch (PSYC 2603 and PSYC 2703)
- Two general Foundation courses 6 ch (selected from PSYC 2203, PSYC 2313, and PSYC 2403)
- Four advanced level Area 6 or Area 7 Psychology courses 12 ch (36xx, 37xx, 46xx, or 47xx level) and Four general advanced level Psychology courses 12 ch (3xxx or 4xxx level chosen from any area of Psychology other than Areas 6 or 7) for a total of Eight advanced level Psychology courses 24 ch
  - o Students must take one or both Basic Research Seminars (PSYC 3151, PSYC 3152) in their third year. Students must also take at least one Topical Seminar (PSYC 4003, PSYC 4110, PSYC 4203, PSYC 4223, PSYC 4303, PSYC 4403, PSYC 4603, PSYC 4713, PSYC 4743, or PSYC 4773).
- Advanced Statistics 3 ch (PSYC 3113)
- Full year Honours Thesis 6 ch (PSYC 4110)
- History of Psychology 3 ch (PSYC 4053)
- Biology 10 ch (BIOL 1001, BIOL 1006, BIOL 1012, and BIOL 1017)
- Mathematics 6 ch (MATH 1003 or MATH 1053; and one of MATH 1013, MATH 1063, or STAT 2264)
- Chemistry 10 ch (CHEM 1001, CHEM 1006, CHEM 1012, and CHEM 1017)
- 6 ch in PHYS 1061 / PHYS 1071, PHYS 1062 / PHYS 1072, ESCI 1001 or ESCI 1012.
- List A Science Courses 18 ch (Any level (i.e. 1xxx, 2xxx, 3xxx, or 4xxx) from Biology, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics, or Statistics)
- List A Advanced Science Courses 6 ch (3xxx or 4xxx) from Biology, Chemistry, Computer Science, Earth Sciences, Mathematics, Physics, or Statistics) and,
- Electives 12 ch (any level from any discipline)

The Honours Thesis: The Honours Thesis will consist of an independent research project, completed in the fourth year, supervised by a Psychology faculty member and discussed in the Honours Thesis Research Seminar. Applicants to the Honours Program should apply by submitting the Honours Program Application Form, normally in the third year of their program, to the Honours Research Coordinator, and are encouraged to approach individual faculty members to find a supervisor. Only students with a cumulative grade point average of at least 3.6 in Psychology courses will be considered for the Honours Program. For the award of a first-class Honours degree, an overall cumulative grade point average of 3.7 is required.

Specialization in Neuroscience

Major and Honours

The major or honours with specialization in neuroscience consists of the distribution of credits as outlined under the respective program with a focus on Biology courses in the List A requirements. To achieve this specialization, students are required to take biology courses consisting of Introductory Biology 6 ch (BIOL 1001 or BIOL 1551 and BIOL 1012 or BIOL 1552) and a minimum of any six additional courses in Biology (18 ch; 2 ch laboratory courses do not count toward the credit total). In addition, students are required to take at least three Area 7 courses in psychology (PSYC37xx or PSYC47xx) as part of their advanced psychology electives. The Honours Thesis is the same as the Honours Thesis described in the above section (The Honours Thesis). However, students are encouraged to do either their Basic Research (PSYC 3151/PSYC 3152) or Honours Thesis research work on a topic represented by Teaching Areas 6 or 7.

Interdepartmental Programs

Nine interdepartmental programs are available based on existing courses in the Science Faculty to meet the needs of students proceeding into an interdisciplinary area. These programs are not truly interdisciplinary but are extracted from the specialized offerings of two Departments in each case.

These programs are administered jointly by the two departments concerned, and students should refer to specified program advisors for counseling.

Students are advised to consult their academic advisors to carefully plan their selection of first and second year courses to ensure that the relevant *Prerequisites* are completed prior to selection of courses at the third and fourth year levels.

Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.

NOTE: In individual cases certain modifications to these programs may be recommended by the Chairs of the Departments concerned, or their delegates.

Honours in Interdepartmental Programs

Application for Honours in the interdepartmental programs is made prior to registration in the final year to the appropriate Department Chairs or their delegates. The Honours content of interdepartmental programs consists of content in addition to that prescribed for the corresponding Major program, usually in the final year. Normally this will be in the form of one of the departmental honours or senior research projects (i.e. BIOL 4090, CHEM 4000, ESCI 4900, MATH 4100, PHYS 4338, STAT 4100). Requirements for qualified students will be approved by the two Departments responsible for the program, in consultation.

NOTE: Requirements for Honours programs generally exceed those for Majors programs. In light of this, students may need to take on a heavier course load than would otherwise be the case to finish the degree in four years. Alternatively, students may need to extend the time needed to finish the degree.

BIOLOGY-CHEMISTRY OPTION

The interdepartmental Biology-Chemistry Program combines courses from Biology, Chemistry, Mathematics and Physics, as well as electives from other disciplines. A minimum of 12 ch of electives must be from courses offered by the Faculty of Arts. Students will normally enter the Biology-Chemistry program after completing the first year science curriculum (32 ch). Students must consult with one of the Biology-Chemistry advisors in order to enter the program.

Two Biology-Chemistry program streams are offered. The Pre-Health Profession stream is recommended for students who may enter a professional health program upon graduation (i.e. medicine, dentistry, pharmacy, optometry, veterinary medicine, etc.). The Comprehensive stream is recommended for students who may consider graduate studies or careers in the biochemistry/molecular biology/pharmaceutical sectors. Both program streams are offered at the Major and Honours level. For the final year of the Honours program, students may choose between Honours by course and Honours by thesis. Entry into either of the

Honours program streams is allowed after first year provided that a minimum CGPA of 3.0 has been attained (a CGPA of 3.0 must be maintained in subsequent years). Upon graduation, Honours students must achieve a minimum final CGPA of 3.0 (3.7 for a First Class Honours standing). A student completing all the course requirements for Honours but with a CGPA below 3.0 will be given a Major degree.

First Year (common to all Biology-Chemistry programs)
BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072.

Pre-Health Profession stream, Major program (132 ch):
Second Year
One of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, BIOL 2023, BIOL 2028, BIOL 2792, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003
Third and Fourth Years
BIOL 1711, BIOL 2063, BIOL 2068, BIOL 2761, BIOL 2812, CHEM 2416, CHEM 3421, CHEM 3523, CHEM 3857, STAT 2264
Electives

1. 12 ch of Arts courses.
2. 15 ch of upper level Biology (3000 or 4000 level courses) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
3. 15 ch of 2000-4000 level Chemistry courses including a minimum of 10 ch in a discipline other than Organic Chemistry (i.e. Analytical, Physical or Inorganic Chemistry).
4. Other electives to total a minimum of 132 ch.

Pre-Health Profession stream, Honours program (144 ch):
Second Year
BIOL 1711, one of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, BIOL 2023, BIOL 2028, BIOL 2792, BIOL 2812, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, 3 ch elective.
Third and Fourth Years
BIOL 2063, BIOL 2068, BIOL 2761, CHEM 2416, CHEM 3421, CHEM 3523, CHEM 3857, STAT 2264. By fourth year, students must choose between Honours by course and Honours by thesis. For Honours by thesis add BIOL 4090 or CHEM 4000.
Electives

1. 12 ch of Arts courses.
2. For Honours by thesis, 15 ch of upper level Biology (3000 or 4000 level courses) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
3. For Honours by thesis, 18 ch of 2000-4000 level Chemistry courses including a minimum of 10 ch in a discipline other than Organic Chemistry (i.e. Analytical, Physical or Inorganic Chemistry).
4. For Honours by course, 21 ch of upper level Biology (3000 or 4000 level courses) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
5. For Honours by course, 21 ch of 2000-4000 level Chemistry courses, including a minimum of 10 ch in a discipline other than Organic Chemistry (i.e. Analytical, Physical or Inorganic Chemistry).
6. Other electives to total a minimum of 144 ch.

Comprehensive Stream, Majors Program (135 ch)
Second Year
One of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, BIOL 2023, BIOL 2028, one of CHEM 2201 or CHEM 2121, one of CHEM 2222 or CHEM 3122, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, STAT 2264.
Third Year
BIOL 2063, BIOL 2068, BIOL 3031, BIOL 3043, CHEM 2416, CHEM 3421, CHEM 3857, one of CHEM 3621, PHYS 3993 or PHYS 3892.
Fourth Year
BIOL 3242, BIOL 3013, BIOL 4272, 1 Group B course**, CHEM 3523, CHEM 4053, CHEM 4513, 1 Group A*.
Electives

1. 12 ch of Arts courses.
2. 4 ch from either electives or Group A courses must be from upper year CHEM labs (CHEM 2136/CHEM 3137/ CHEM 2237/CHEM 3236/CHEM 3637/CHEM 4616)
3. Other electives to total a minimum of 135 ch.

Comprehensive stream, Honours program (144 ch):
Second Year
One of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, BIOL 2023, BIOL 2028, one of CHEM 2201 or CHEM 2121, one of CHEM 2222 or CHEM 3122, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, STAT 2264.
Third Year
BIOL 2063, BIOL 2068, BIOL 3033, BIOL 3242 , CHEM 2416, CHEM 3421, CHEM 3857, one of CHEM 3621, PHYS 3993 or PHYS 3892, 2 Group A courses*
Fourth Year

BIOL 3043, BIOL 3013, BIOL 4272, 1 Group B course**, CHEM 3003, CHEM 4513, CHEM 4523, 1 Group A course*.
By fourth year, students must choose between Honours by course and Honours by thesis and add the following to their program:

i.   Honours by course: add 3 Group A courses*.
ii. Honours by thesis: add BIOL 4090 or CHEM 4000. Please see the course descriptions for BIOL 4090 and CHEM 4000 for details regarding admission to the thesis research courses.

Electives

1. 12 ch of Arts courses.
2. 4 ch from either electives or Group A must be from upper year CHEM labs (CHEM 2136/CHEM 3137/CHEM 2237/CHEM 3236/CHEM 3637/ CHEM 4616)
3. Other electives to total a minimum of 144 ch.

* Group A courses:
BIOL 3058, BIOL 3073, BIOL 3133, BIOL 3149, BIOL 3162, BIOL 3207, BIOL 3261, BIOL 3493, BIOL 3593, BIOL 3673, BIOL 3082, BIOL 3812, BIOL 3833, BIOL 3908, BIOL 3933, BIOL 4043, BIOL 4149***, BIOL 4182, BIOL 4533, BIOL 4581, BIOL 5473, CHEM 3003, any 2000-4000 level CHEM course, MATH 2213, PHYS 3993.
** Group B courses:
BIOL 3058, BIOL 3207, BIOL 3908, BIOL 4182, BIOL 4533, BIOL 4581.
***NOTE that students can only receive credit for either BIOL 4149 or BIOL 4090.

BIOLOGY-MATHEMATICS/STATISTICS OPTION
Biology is a quantitative discipline and mathematics underpins all sub-disciplines in Biology. Students with a strong quatitative background are better positioned for graduate research. Areas in which Math/Stat are used extensively include all areas of ecology and evolution , bioinformatics, genomics, biochemistry, molecular biology, and systems biology. To ensure necessary *Prerequisites* are met when planning an individual program, students must consult with advisors from both departments, ideally prior to second year.
Requirements for the Major Program
First Year
First year required courses are listed under the BSc general regulations. BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063 must be included. Suggested electives are STAT 2264 and CS 1003 or CS 1073. CS 1003 or CS 1073, and STAT 2264, if not taken in first year must be taken later in the program.
Second Year
One of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, MATH 2003, MATH 2013, MATH 2203, MATH 2213, plus 6 ch in Biology or Math/Stat, plus approved electives totalling at least 6 ch.
NOTES:

1. Students interested in the more molecular aspects of biology such as biochemistry, biophysics, etc may be given to permission to take BIOL 2023, BIOI 2028.
2. Careful planning of the program will be required to avoid timetable problems.

Third and Fourth Years
Approved Biology courses (mostly at the 3000 and 4000 level) for a total of 24 ch in Biology, MATH 3003, MATH 3213, MATH 4563, STAT 3083, STAT 3093, plus a total of 9 ch approved Math/Stat courses, plus additional approved electives totalling 12 ch. A minimum of 12 ch of electives must be from the Faculty of Arts.
A minimum of 129 ch is required for completion of this program.
NOTES:

1. Students should consider the following courses in selecting Mathematics/Statistics courses.

    Analytical Orientation: MATH 3043, MATH 3073, MATH 3413, MATH 4503
    Statistical Orientation: STAT 4053*, STAT 4073, STAT 4083, STAT 3373*, STAT 3383*
    (Courses marked with an * are particularly recommended)

    Students should consider BIOL 2003, BIOL 3293 and BIOL 3943 in selecting Biology courses.

2. MATH 4563 (cross-listed as BIOL 4563) is offered in alternate years. Special care is required in scheduling.

Requirements for the Honours Program
There are two Honours programs (Honours by Course and Honours by Thesis). Students must have (and maintain) a minimum CPGA of 3.0 to be accepted in and remain in either program. Upon graduation, the Honours student must achieve a minimum final CGPA of 3.7 for a First Class Honours standing and a final CGPA of at least 3.0 for Honours. A student completing all the course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

i.   Honours by Course (141 ch): In addition to the requirements for the Major degree listed above, the student must complete 12 ch of

approved Biology or Mathematics/Statistics courses at the 3000 or 4000 level (with at least one from each of the Biology and Mathematics/Statistics Departments).

ii. Honours by Thesis (141 ch): Refer to the requirements for an Honours by Course degree listed above. In addition, students intending to complete an Honours by Thesis degree must arrange to complete their dissertation research with a faculty member in either the Department of Biology or Department of Mathematics and Statistics before applying to the program. (Joint supervision with a co-supervisor from each department is also possible.) Once an appropriate supervisor is found, the student must then write a letter to the Chair of the appropriate Department requesting entrance into the thesis course (one of BIOL 4090 or MATH 4100 or STAT 4100) as part of the additional 12 ch required by the Honours program. A reader from the second department must also oversee the research project (unless the project is co-supervised by a member from each department).

BIOLOGY-PHYSICS OPTION

Physical principles constrain the evolution and diversity of life. Current areas where Physics features most prominently in Biology include ecosystem ecology and global change biology, interactions of organisms with their physical environment, studies of metabolism and energy flux, and the physical principles of biological systems. Methodological applications such as isotope biology, and imaging also rely heavily on physical principles. Students interested in these areas will benefit from a strong background in both disciplines. To ensure necessary *Prerequisites* are met when planning an individual program, students must consult with advisors from both departments, ideally prior to Second Year.

Requirements for the Major Program (141 ch)
First Year
BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091 and PHYS 1092.

Second Year
One of the pairs BIOL 2013 and BIOL 2018 or BIOL 2053 and BIOL 2103, plus 6 ch in Biology (second-year core courses), plus PHYS 2311, PHYS 2312, PHYS 2341, PHYS 2351, MATH 2003, MATH 2013 and (MATH 2213 or MATH 1503), STAT 2264 or STAT 2593.

Third and Fourth Years
24 ch of approved Biology courses (mostly at the 3000 and 4000 level), plus 30 ch of approved Physics courses, plus 12 ch of approved Arts electives.

Requirements for the Honours Program (153 ch)
To receive Honours in Biology-Physics, a student must complete a total of 156 ch, including the requirements for the Major Program, plus an additional 12 ch of approved Biology or Physics courses at the 3000 or 4000 level. Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. Application to the Honours program is initiated by writing a letter of intent to the Chair of Biology or Physics before preregistration at the end of Year III. BIOL 4090 (Honours Thesis Project) or PHYS 4338 (Advanced Research Project) is required and the course descriptions should be consulted for further information and specific procedures. Students must make arrangements to complete their dissertation research with a Faculty member in the Department of Biology or of Physics before applying to the Program. In each case, a reader from the second department must also oversee the research project.

The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Major degree.

CHEMISTRY-PHYSICS OPTION
The Chemistry-Physics Option offers a challenging program for strong students. This interdepartmental program provides a solid core of courses in both Chemistry and Physics. It is set up in such a way that a student may opt for the single disciplines of Chemistry or Physics after the second year. A BSc in this joint program would allow students to continue studies at the graduate level in either Physics or Physical Chemistry.

Careful choice of electives in first and second year will make any change from the joint program into a single discipline program easier.

First Year
CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091 and PHYS 1092, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, plus two more term lecture courses chosen from BIOL 1001, BIOL 1012, ESCI 1001, ESCI 1012, plus 6 ch electives.
NOTE: Students must have a minimum AGPA of 3.0 to enter second year of this program and they must maintain the 3.0 AGPA at the end of second year to proceed to third year. Students must have passed MATH 1013 or MATH 1063 before entering the second year of this program. Because of the challenging nature of the program, some students may plan to spread the required courses over five years.

Second Year

CHEM 2601, or PHYS 2341, CHEM 3637, MATH 2003, MATH 2013, MATH 2213, PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2351, CS 1003 or CS 1073, plus 3 ch approved electives.

Third Year
CHEM 2002, CHEM 2201, CHEM 2222, CHEM 2421, CHEM 2422, CHEM 3621, PHYS 2372, PHYS 3336, PHYS 3331, PHYS 3351, CS 3113 or MATH 3413 or equivalent plus 3 ch approved electives.

Fourth Year
CHEM 3201, CHEM 4212, CHEM 4612, CHEM 4616, CHEM 4622, CHEM 4601 or PHYS 3752, PHYS 3322, PHYS 4332, PHYS 4351, plus 6 ch approved electives. Students in Honours add PHYS 4338 or CHEM 4000 and must have a minimum AGPA of 3.0 entering fourth year.

EARTH SCIENCES-PHSYICS OPTION
The program totals 148 ch for Major and 156 ch for Honours. This includes 12 ch of Earth Sciences field schools which take place outside of regular fall and winter terms. The fourth year has a lighter credit hour course load than third year to accommodate the addition of an Honours Project in fourth year. Students in a Major program may prefer to move some of the courses listed under third year into fourth year to even out the course load.

First Year
ESCI 1001, ESCI 1006 or ESCI 1026, ESCI 1012, ESCI 1017, PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091 and PHYS 1092, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017.
NOTE: Students must have already completed MATH 1013 or equivalent before entering the second year of this program.

Second Year
ESCI 2131, ESCI 2142, ESCI 2211, ESCI 2321, ESCI 2703, PHYS 2311, PHYS 2312, PHYS 2372, MATH 2003, MATH 2013 plus 6 ch approved electives in Science or Computer Science.

Third Year
ESCI 3131, ESCI 3322, PHYS 2327, PHYS 2331, PHYS 2341, PHYS 2351, PHYS 3331, PHYS 3336, CS 3113 or MATH 3413 or equivalent plus 2 ch approved electives in Science or Computer Science.

Fourth Year
ESCI 3703, ESCI 4501, ESCI 4512, PHYS 3322, PHYS 3342, PHYS 3351, PHYS 4332, PHYS 4722 or PHYS 4823, plus 6 ch approved electives in Science or Computer Science.
Students in the Honours program add an honours project, PHYS 4338 or ESCI 4900.

MATHEMATICS/STATISTICS – ECONOMICS OPTION
The combination of mathematics, statistics and economics is a natural one as students will see practical applications of mathematics and statistics in their economics courses and the rigorous techniques from mathematics will aid students in their problem-solving skills.

Requirements for a Science degree are listed below. Requirements for an Arts degree are available from either the Department of Mathematics and Statistics or the Department of Economics.

First Year
First year required courses are listed under the BSc general regulations. MATH 1013 or MATH 1063 must be included. CS 1003 or CS 1073, one of ECON 1014 and ECON 1024 or ECON 1013 and ECON 1023 may be taken in first or second year.

Second Year
MATH 2003, MATH 2013, MATH 2203, MATH 2213, ECON 1013, ECON 1023, CS 1003 or CS 1073 (if not taken in first year), plus approved electives to bring the course load to a minimum of 30 ch.

Third and Fourth Years

1. MATH 3003, MATH 3043, and two courses chosen from MATH 3033, MATH 3073, MATH 3213, MATH 3243, MATH 3373, MATH 3473, MATH 3803, MATH 3843, MATH 4423, MATH 4433 or MATH 4853.
2. STAT 3083, STAT 3093, STAT 4443, and three courses chosen from STAT 4083, STAT 3383, STAT 4053, STAT 4073 or STAT 3373.
3. ECON 3013, ECON 3023, ECON 4013, ECON 4023, ECON 4625, ECON 4665, plus at least 3 additional term courses in Economics.
4. An additional 9 ch of electives so that the total in third and fourth year is 66 ch. The minimum total number of credits for the degree is 135 ch.

Recommended electives: MATH 3413, MATH 3813, and any of the courses listed above.

Honours Requirements
MATH 3103 and MATH 3113 must be taken and MATH 3003 becomes an elective course. Honours students must take a total of 33 ch of upper level MATH/STAT courses. The minimum GPA for an honours degree from the Faculty of Science is 3.0.
NOTE: Some year-to-year variation in Economics course selection is possible. For example a student taking ECON 1014, ECON 1024 in year 1 may wish to take ECON 3013, ECON 3023 in year 2.

MATHEMATICS-PHYSICS OPTION

Both the Major and Honours versions of this option are demanding programs intended for strong students. The Honours Mathematics-Physics Program includes all the required courses of both an Honours Physics program and an Honours Mathematics program.

First Year
MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1091 and PHYS 1092, CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, plus two more term courses chosen from BIOL 1001, BIOL 1012, ESCI 1001, ESCI 1012, plus 6 ch of electives.

HONOURS PROGRAM

Second Year
MATH 2003, MATH 2013, MATH 2203, MATH 2213, PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2341, PHYS 2351, PHYS 2372, CS 1003 plus 3 ch Physics elective.

Third Year
MATH 3033, MATH 3043, MATH 3103, MATH 3113, MATH 3243, MATH 3213, MATH 3413, PHYS 3322, PHYS 3336, PHYS 3342, PHYS 3351, plus 3 ch Physics elective.

Fourth Year
STAT 3083, PHYS 4321, PHYS 4332, PHYS 4351, PHYS 4371, plus 6 ch Mathematics elective, plus 6 ch other electives; and finally either MATH 4100 or PHYS 4338 (6 ch or 8 ch). (In either case, the research project will be jointly supervised by a reader from each Department.)

MAJOR PROGRAM

Second Year
MATH 2003, MATH 2013, MATH 2213, PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2341, PHYS 2351, PHYS 2372, CS 1003, plus 6 ch elective.

Third and Fourth Years
MATH 3043 or MATH 3503, MATH 3243, MATH 3413, STAT 3083, PHYS 3322, PHYS 3336, PHYS 3342, PHYS 3351, PHYS 4321, PHYS 4332, 18 ch Mathematics electives*, 15 ch Physics electives, plus 3 ch electives.
* It is recommended that students choose MATH 3003 and MATH 3213 in Yearr 3. Other suggested Math electives would be MATH 2203 and MATH 3033.

ENVIRONMENTAL SCIENCES OPTION

Goal
Do you want to explore and understand the impacts of humans on the environment, and of the environment on humans? Do you want to learn to use the scientific approach to solve environmental problems? Navigating the complex issues involved is a challenge that requires a broad range of skills and perspectives. This type of training is brought together at UNB through our interdepartmental programs in the Environmental Sciences.

Programs
Undergraduate programs in the Environmental Sciences encompass knowledge gleaned from all science disciplines and commence with a common core similar to that of other students in the Faculty of Science. This introduction provides the student with a theoretical and experiential grounding in scientific principles pertaining to earth's environmental system: its biosphere, atmosphere, hydrosphere, and geosphere. Students then advance to consider environmental issues from broader ethical, economic, and social viewpoints. At the same time, students are further developing their own scientific interests with a more specific collection of required and elective science courses. These advanced science courses are tailored to graduation as either a Major or Honours (by thesis) in Environmental Sciences with a concentration (i.e., stream) in one of six areas:
- Biological Responses to the Environment
- Chemical Environmental Perspectives
- Environmetrics
- Responsible Resource Recovery
- Sun-Earth Interaction
- Water-Earth Interaction

There is no Minor program available in Environmental Sciences. Note, however, that a student (who is not in an Environmental Sciences program) can obtain a Minor in Environmental Studies.

General Outline

First Year Core
Fall
SCI 1001; MATH 1003 or MATH 1053; CHEM 1001, CHEM 1006; ESCI 1012, ESCI 1017
Plus lecture and laboratory pairing from **one** other science (see Streams for which should be taken in 1st year): BIOL 1001 and BIOL 1006, or PHYS 1051/1061/1071 and PHYS 1091
Winter
SCI 1002; MATH 1013 or MATH 1063; CHEM 1012, CHEM 1017; ESCI 1001, ESCI 1006
Plus lecture and laboratory pairing from one other science (see Streams for which should be taken in 1st year): BIOL 1012 and BIOL 1017, or PHYS 1052/1062/1072 and PHYS 1092

2nd – 4th Year General Requirements (*see Streams for any specific courses that should be taken, and in what year)

-Lecture and laboratory pairing of BIOL 1001 and BIOL 1006 or PHYS 1051/61/71 and PHYS 1091, whichever not counted as 1st year requirements
-BIOL 1012 and BIOL 1017 if not taken as 1st Year requirement
-MATH 1503 or MATH 2213 (Linear Algebra)
-BIOL 2003, BIOL 2008 (Ecology)
-At least one 2000-level lecture and laboratory pairing in Chemistry*
-At least one 2000- or 3000-level course in Earth Sciences*
-At least one 2000- or 3000-level course in Statistics*
-PHYS 2902 (Environmental Physics)
-ENVS 2003 (Environmental Studies)
-ESCI 3442 (Geohydrology)
-ESCI 4452 (Environmental Impact Assessment)
-SCI 4999 (capstone course, to be taken in final year)
-One course in Field Studies*
-One course in Climate Change*
-One course in Geographic Information Systems (GIS)*
-One course in First Nations Studies*
-One course in Ethics*
-Two (additional) courses from the Faculty of Arts
-For Major program, approximately 11 science courses in one of the six Streams (see below).
-For Honours program, Thesis course* in addition to the requirements of the Major program.

Streams in Environmental Sciences
Students choose one of the six streams offered. The student's interests and choice of 1st year core science courses will determine which stream is advised (A-group streams should take 1000-level BIOL courses in 1st year with 1000-level PHYS courses in a later year, B-group streams should take 1000-level PHYS in 1st year with 1000-level BIOL courses in a later year).
A1) Biological Responses to the Environment
A2) Chemical Environmental Perspectives
A3) Environmetrics
B4) Responsible Resource Recovery
B5) Sun-Earth Interaction
B6) Water-Earth Interaction

A1) Stream in Biological Responses to the Environment
Living organisms are constantly interacting with their environment and changing in response to it. At relatively small time scales, individuals do this biochemically, physiologically and behaviourally; at larger time scales, populations do this by adapting. At a time when our planet is being transformed by human activities, it is important to understand how living entities can or cannot respond to such changes. The "Biological Responses to the Environment" stream, supported by a strong science foundation and an examination of the environment from different perspectives, focuses on a deep knowledge of the various life forms on our planet and their responses at all levels (molecular, cellular, organismal, population and community) to the environment.
Students particularly interested in management aspects should consider the Wildlife Conservation Major in the ENR Program.

Major program (141 ch)
1st Year (18 ch + 19 ch)
Fall: BIOL 1001, BIOL 1006; MATH 1003 or MATH 1053; CHEM 1001, CHEM 1006; ESCI 1012, ESCI 1017; SCI 1001.
Winter: BIOL 1012, BIOL 1017; MATH 1013 or MATH 1063; CHEM 1012, CHEM 1017; ESCI 1001, ESCI 1006; SCI 1002.
2nd Year (17 ch + 18 ch)
Fall: BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch); BIOL 2023, BIOL 2028 (Biochemistry lecture and lab, 6 ch); CHEM 2401 or CHEM 2421, CHEM 2416 (lecture and lab in Organic Chemistry I, 5 ch).
Winter: BIOL 2013, BIOL 2018 (Evolutionary Genetics lecture and lab, 6 ch); BIOL 2063, BIOL 2068 (Biological Diversity lecture and lab, 6 ch); STAT 2264 (Statistics for Biology, 3 ch); ENVS 2003 (Introduction to Environmental Studies, 3 ch).
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 68 ch for a Major)
Core courses (42 ch):
-PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1091 (Introductory Physics lecture and lab, 5 ch) (3rd Year, Fa);
-MATH 1503 or MATH 2213 (Linear Algebra, 3 ch);
-ESCI 3271/BIOL 3371 (Paleontology, 4 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment, 4 ch, Wi);
-PHYS 2902 (Environmental Physics, 3 ch, Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Field Studies: one of BIOL 3173 (Marine Biology Field Course (O), 4 ch, Su), BIOL 3383 (Research Foundations in Field Ecology (O), 4 ch, Su), BIOL 4443 (International Ecology Field Course (A), 4 ch, Wi), the Marine Block Semester, or equivalent;
-Climate Change: one of BIOL 4351 (Climate Change and Environmental Response, 3 ch, Fa), ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: one of FOR 1285 (Introduction to GIS, 3 ch, online), FOR 2281 (GIS

with Applications in Forestry and Environmental Management, 3 ch, Fa or Wi), GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001 (Resource Management Issues, Ethics and Communication I, 4 ch, Fa).
Other courses (27 ch):
-Seven stream courses from the list below (at least one course from each of the 5 subgroups; minimum 21 ch);
-Two Arts electives, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 2114 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa);
List of stream electives:
Molecular & Cell Subgroup
BIOL 3033 Cell Signaling, 3 ch
BIOL 3043 Cell Biology, 3 ch, Fa
BIOL 3013 Advanced Genetics, 3 ch, Fa
BIOL 3073 Biochemistry of Gene Expression, 3 ch, Wi
BIOL 3162 Developmental Biology of Animals, 3 ch, Wi
BIOL 3242 Molecular Evolution, 3 ch, Fa
BIOL 3261 Microbiology, 3 ch, Fa
BIOL 3311 Immunobiology, 3 ch (Wi)
BIOL 4043 Cellular Metabolism, 3 ch (Wi)
Organismal Subgroup
BIOL 1846 New Brunswick Plants and Their Habitats, 4 ch, Su
BIOL 3083 Botany, 5 ch, Fa
BIOL 3261 Microbiology, 3 ch, Fa
BIOL 3493 Introduction to Virology, 3 ch, Fa
BIOL 3603 Invertebrate Zoology, 5 ch, Fa, Fa
BIOL 3673 General Parasitology, 3 ch, Fa
BIOL 3703 Vertebrate Zoology, 5 ch, Wi
BIOL 3812 Comparative Vertebrate Endocrinology, 3 ch, Wi
BIOL 3883 Entomology, 5 ch, Fa
BIOL 3801 Animal Physiology, 3 ch, Wi
BIOL 3873 Ethology, 3 ch, Wi
BIOL 4581 Eukaryotic Microbiology, 5 ch, Fa
BIOL 4691 Biology of Marine Parasites, 5 ch, Fa
BIOL 4732 Mammalogy, 5 ch, Wi
BIOL 4741 Fish Biology, 3 ch, Fa
BIOL 4823 Life in Extreme Environments (A), 3 ch, Wi
BIOL 4981 Biology of Freshwater and Marine Fishes (A), 5 ch, Fa
Population, Community and Ecosystem Subgroup
BIOL 3113 Evolutionary Ecology, 5 ch, Wi
BIOL 3293 Population Genetics, 4 ch, Fa
BIOL 3441 Ecology of Populations and Communities (cross-listed with FOR 3445), 4 ch, Fa
BIOL 3633 Biological Oceanography, 3 ch
BIOL 4393 Trophic and Food Web Ecology, 3 ch
BIOL 4641 Coastal Marine Ecology, 5 ch, Fa
BIOL 4773 River and Lake Ecosystems (A), 3 ch, Wi
BIOL 4863 Environmental Biology (A), Fa
BIOL 4851 Ecology of Marine Birds (A), 5 ch
BIOL 4973 Topics in Aquatic Ecology (A), 3 ch
Analytical Skills Subgroup
BIOL 3058 Genetic Analysis Laboratory, 4 ch, Fa
BIOL 3113 Evolutionary Ecology, 5 ch, Wi
BIOL 3207 Microbiology Laboratory, 4 ch, Wi
BIOL 3293 Population Genetics, 4 ch, Fa
BIOL 3908 Laboratory Studies in Vertebrate Physiology, 3 ch, Wi
BIOL 3933 Practical Computing in Biology, 3 ch, Fa
BIOL 3943 Hypothesis Testing in Biology, 3 ch, Wi
BIOL 4182 Experimental Embryology, 4 ch, Fa
BIOL 4368 Techniques in Paleoecology and Climate Change, 3 ch, Wi
BIOL 4393 Trophic and Food Web Ecology, 3 ch
BIOL 4523 Phylogenetics, 5 ch, Fa
BIOL 4533 Bioinformatics: Computational Analysis of Genes and Genomes, 4 ch, Wi
BIOL 4563 Mathematical Biology (A) (cross-listed with MATH 4563), 3 ch, Wi
BIOL 4746 Laboratory Studies in Fish Biology (A), 4 ch, Fa
BIOL 5473 Experimental Design and Data Analysis in Biology and Forestry, 3 ch
CHEM 2121, CHEM 2136 Analytical Chemistry 1 lecture and lab, 5 ch, Fa), or
CHEM 2201, CHEM 2237 Inorganic Chemistry 1 lecture and lab, 5 ch, Fa)
Applied Biology Subgroup
BIOL 4191 Wildlife Management, 3 ch, Wi
BIOL 4233 Conservation Biology, 3 ch, Wi
BIOL 4302 Microbial Biotechnology, 3 ch, Wi

Honours program (150 ch)
Same courses as for a Major program, plus BIOL 4090 (Honours Thesis Project, 9 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. Application to the Honours by Thesis program in Biology is initiated by writing a letter of intent to the Chair of Biology before preregistration at the end of year 3. Students must make arrangements to complete their dissertation research with a Faculty member in the Department of Biology before applying to the program. Consult the course description for BIOL 4090 for further information and specific procedures. The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.
A2) Stream in Chemical Environmental Perspectives
Understanding the properties and reactivity of molecules, in addition to their identification and quantification, is at the heart of understanding and mitigating human impact on the environment. This knowledge is essential for monitoring industry, investigating and solving environmental problems, and creating paths for human activity that are less harmful to the environment. The stream in "Chemical Environmental Perspectives", supported by a strong science foundation and an examination of the environment from different perspectives, focuses on training in chemistry.
Major program (140 ch)
1st Year (18 ch + 19 ch)
Fall: MATH 1003 or MATH 1053; CHEM 1001, CHEM 1006; ESCI 1012, ESCI 1017; BIOL 1001, BIOL 1006; SCI 1001.
Winter: MATH 1013 or MATH 1063; CHEM 1012, CHEM 1017; ESCI 1001, ESCI 1006; BIOL 1012, BIOL 1017; SCI 1002.
2nd Year (37 ch)
Two of the following pairs: CHEM 2421, CHEM 2422 (Organic Chemistry I and II, 6 ch); CHEM 2201, CHEM 2222 (Inorganic Chemistry I and II, 6 ch); CHEM 2121, CHEM 3122 (Analytical Chemistry I and II, 6 ch);
Two of CHEM 2416 (Organic Chemistry Laboratory I, 2 ch), CHEM 2237 (Inorganic Chemistry Laboratory I, 2 ch), CHEM 2136 (Analytical Chemistry Laboratory I, 2 ch);
Also:
Fall: BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch); ENVS 2003 (Introduction to Environmental Studies, 3 ch).
Winter: One of the pairs BIOL 2013 and BIOL 2018 (Evolutionary Genetics lecture and lab, 6 ch) or BIOL 2053 and BIOL 2103; MATH 1503 or MATH 2213 (Linear Algebra, 3 ch); STATS 2264 (Statistics for Biology, 3 ch).
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 62 ch for a Major)
Core courses (45 ch):
-PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1091 (Introductory Physics lecture and lab, 5 ch) (3rd Year, Fa);
-One lecture and laboratory pairing from CHEM 3000-4000 (4-5 ch): recommend CHEM 4112 (Advanced Analytical Chemistry, 2 ch) and CHEM 3137 (Analytical Chemistry Laboratory II, 2 ch);
-BIOL 2023 (Introductory Biochemistry, 3 ch, Fa);
-ESCI 3271 (Paleontology, 4 ch, Fa -required if planning to take ESCI 3292 Climate Change) or ESCI 2211 (Sedimentology and Stratigraphy, 4 ch, Fa), or ESCI 2602 (Principles of Geochemistry, 4 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment, 4 ch, Wi);
-PHYS 2902 (Environmental Physics, 3 ch, Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Field Studies: one of BIOL 1846 (New Brunswick Plants and Their Habitats, 4 ch, Su), BIOL 3173 (Marine Biology Field Course (O), 4 ch, Su), BIOL 3383 (Research Foundations in Field Ecology (O), 4 ch, Su), BIOL 4443 (International Ecology Field Course (A), 4 ch, Wi), ESCI 1703 (Field School (1 week), 3 ch, Su), or equivalent;
-Climate Change: one of BIOL 4351 (Climate Change and Environmental Response, 3 ch, Fa), ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: one of FOR 1285 (Introduction to GIS, 3 ch, online), FOR 2281 (GIS with Applications in Forestry and Environmental Management, 3 ch, Fa or Wi), GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001 (Resource Management Issues, Ethics and Communication I, 4 ch).
Other courses (21 ch):
-Five stream courses from the list below (minimum 15 ch);
-Two Arts electives, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 3117 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa).
List of stream electives:

BIOL 1846 New Brunswick Plants and Their Habitats, 4 ch Su (if not taken as a core course)
BIOL 2028 Laboratory in Biochemistry, 3 ch
BIOL 2063 and BIOL 2068 Biological Diversity lecture and lab, 6 ch
BIOL 3013 Advanced Genetics, 3 ch
BIOL 3033 Cell Signaling, 3 ch
BIOL 3043 Cell Biology, 3 ch
BIOL 3073 Biochemistry of Gene Expression*, 3 ch
BIOL 3113 Evolutionary Ecology, 5 ch
BIOL 3162 Developmental Biology of Animals*, 3 ch
BIOL 3261 Microbiology*, 3 ch
BIOL 3311 Immunobiology, 3 ch
BIOL 3441 Ecology of Populations and Communities (cross-listed with FOR 3445), 4 ch
BIOL 3633 Biological Oceanography, 3 ch
BIOL 3801 Animal Physiology, 3 ch
BIOL 3812 Comparative Vertebrate Endocrinology, 3 ch
BIOL 3933 Practical Computing in Biology, 3 ch
BIOL 3943 Hypothesis Testing in Biology, 3 ch
BIOL 4043 Cellular Metabolism*, 3 ch
BIOL 4302 Microbial Biotechnology*, 3 ch
BIOL 4773 River and Lake Ecosystems (A), 3 ch
CHEM 2321 Structural Analysis in Chemistry, 3 ch
CHEM 2601 Physical Chemistry I, 3 ch
CHEM 3137 Analytical Chemistry Laboratory II, 2 ch (if not taken as a core course)
CHEM 3201 Inorganic Chemistry III, 3 ch
CHEM 3422 Organic Chemistry IV, 3 ch
CHEM 3523 Medicinal Chemistry, 3 ch
CHEM 3601 Physical Chemistry II, 3 ch
CHEM 4112 Advanced Analytical Chemistry, 2 ch (if not taken as a core course)
CHEM 4212 Inorganic Chemistry IV, 3 ch
CHEM 4222 Advanced Inorganic Chemistry, 2 ch
CHEM 4422 Advanced Organic Chemistry, 2 ch
CHEM 4416 Organic Chemistry Laboratory II, 2 ch
ESCI 2602 Principles of Geochemistry, 4 ch
ESCI 3282 Introductory Oceanography and Paleoceanography (A), 4 ch
ESCI 3631 Geochemistry of Natural Waters, 4 ch

Honours program (149 ch)
Same courses as for a Major program, plus CHEM 4000 (Senior Research Projects, 9 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. Students who choose this path will conduct a research project in collaboration with a Faculty member. A minimum of 9 hrs per week is required to successfully accomplish the goals of a senior research project, and a thesis, and presentation of thesis work to the department, are required at the end of the academic year. The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

A3) Stream in Environmetrics
The amount of data collected in sampling and monitoring the environment is on the rise, as many different monitoring technologies are developed and used. Consequently, there is a need for trained personnel to develop and use mathematical, statistical, and other quantitative methods in the environmental sciences, environmental engineering, and environmental monitoring and protection. The "Environmetrics" stream, supported by a strong science foundation and an examination of the environment from different perspectives, focuses on in-depth mathematical and statistical training.

Major program (138 ch)
1st Year (18 ch + 19 ch)
Fall: MATH 1003 or MATH 1053; CHEM 1001, CHEM 1006; ESCI 1012, ESCI 1017; BIOL 1001, BIOL 1006; SCI 1001.
Winter: MATH 1013 or MATH 1063; CHEM 1012, CHEM 1017; ESCI 1001, ESCI 1006; BIOL 1012, BIOL 1017; SCI 1002.
2nd Year (19 ch + 18 ch)
Fall: MATH 2003 (Intermediate Mathematics I, 3 ch); STAT 3083 (Probability and Mathematical Statistics I, 3 ch); PHYS 1051 or PHYS 1061, PHYS 1091 (5 ch); one Arts or free elective (3 ch, see suggestions below);
Also, one of the following pairs: CHEM 2121, CHEM 2136 (Analytical Chemistry 1 lecture and lab, 5 ch); CHEM 2201, CHEM 2237 (Inorganic Chemistry 1 lecture and lab, 5 ch);
Winter: Math 2213 (Linear Algebra I, 3 ch); STAT 3093 (Probability and Mathematical Statistics II (A), 3 ch); PHYS 1052 or PHYS 1062, PHYS 1092 (5 ch); CS 1073 (Introduction to Computer Programming I (in Java), 4 ch); ENVS 2003 (Introduction to Environmental Studies, 3 ch).
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 64 ch for a Major)
Core courses (43 ch):
-BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch, Fa);
-BIOL 3933 (Practical Computing in Biology, 3 ch, Fa);
-ESCI 3271 (Paleontology, 4 ch, Fa -required if planning to take ESCI

3292 Climate Change) or ESCI 2211 (Sedimentology and Stratigraphy, 4 ch, Fa), or ESCI 2602 (Principles of Geochemistry, 4 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment (A), 4 ch, Wi);
-PHYS 2902 (Environmental Physics, 3 ch, Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Field Studies: one of BIOL 1846 (New Brunswick Plants and Their Habitats, 4 ch, Su), BIOL 3173 (Marine Biology Field Course (O), 4 ch, Su), BIOL 3383 (Research Foundations in Field Ecology (O), 4 ch, Su), BIOL 4443 (International Ecology Field Course (A), 4 ch, Wi), ESCI 1703 (Field School (1 week), 3 ch, Su), or equivalent;
-Climate Change: one of BIOL 4351 (Climate Change and Environmental Response, 3 ch, Fa), ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001 (Resource Management Issues, Ethics and Communication I, 4 ch, Fa).
Other courses (21 ch):
-Five stream courses from the list below;
-One or two (if not taken in 2nd Year) Arts elective, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 3117 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa);
-One (if not taken in 2nd Year) free elective (can be from the stream's list below).
List of suggested stream electives (free elective can also be from this list); other upper year Math/Stats courses may be discussed with an advisor:
MATH 2013 Intermediate Mathematics II, 3 ch
MATH 3043 or MATH 3503 Ordinary Differential Equations, 3 ch
MATH 3003 or MATH 3103 Applied Analysis or Analysis I, 3 ch
MATH 3113 Analysis II, 3 ch
MATH 3073 Partial Differential Equations, 3 ch
MATH 3413 Introduction to Numerical Methods, 3 ch
MATH 3473 Mathematical Modelling (A), 3 ch
MATH 4142 Introduction to Dynamical Systems (O), 3 ch
MATH 4563 Mathematical Biology (A), 3 ch
STAT 3373 Elementary Experimental Design, 3 ch
STAT 4043 Sample Survey Theory, 3 ch
STAT 4053 Regression Analysis, 3 ch
STAT 4073 Categorical Data Analysis, 3 ch
STAT 4083 Introduction to Multivariate Statistics, 3 ch
STAT 4293 Statistical Computing, 3 ch
STAT 4443 Time Series Analysis and Applications (A), 3 ch

Honours program (147 ch)
Same courses as for a Major program, plus MATH 4100 or STAT 4100 (Honours Project, 6 ch), plus one 3rd or 4th year Math/STAT course (3 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. Students normally choose an Honours or a Majors degree in the Third Year. Students must apply to the Department Chair for admission to the Honours program. The Honours degree is the normal prerequisite for graduate study in the mathematical sciences. The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

B4) Stream in Responsible Resource Recovery
For society to continue to function, extraction of our gradually depleting geological resources will remain a necessity (e.g., aggregate, fertilizer, metal, petroleum and water for agriculture, communications, construction, lubricants, plastics, renewable energy, transport). The next generation of scientists must not only carefully manage these dwindling resources, but also explore and extract them with much greater awareness and consideration of both the risk of environmental degradation and pollution, and the subsequent management of waste material. The "Responsible Resource Recovery" stream provides the student with knowledge and understanding of a broad range of environmental and socio-economic issues and how such issues relate to the science of geological resources.

Major Program (142 ch)
1st Year (18 ch + 19 ch)
Fall: ESCI 1012, ESCI 1017; CHEM 1001, CHEM 1006; MATH 1003 or MATH 1053; PHYS 1051 or PHYS 1061, PHYS 1091; SCI 1001.
Winter: ESCI 1001, ESCI 1006; CHEM 1012, CHEM 1017; MATH 1013 or MATH 1063; PHYS 1052 or PHYS 1062, PHYS 1092; SCI 1002.
2nd Year (17 ch + 19 ch + 5 ch field school = 41 ch)

Fall: ESCI 2131 (Earth and Planetary Materials, 4 ch), ESCI 2211 (Sedimentology and Stratigraphy, 4 ch), ESCI 2602 (Principles of

Geochemistry, 4 ch); BIOL 1001, BIOL 1006 (Biological Principles I, lecture and lab, 5 ch).
Winter: ESCI 2142 (Mineralogy and Petrology, 4 ch), ESCI 2321 (Structural Geology 1, 4 ch); BIOL 1012, BIOL 1017 (Biological Principles II, lecture and lab, 5 ch); MATH 1503 or MATH 2213(Linear Algebra, 3 ch); STAT 2264 (Statistics for Biology, 3 ch);
And: ESCI 2703 (Field School (2 weeks), 5 ch) after April exams.
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 65 ch for a Major)
Core courses (42 ch):
-BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch, Fa);
-CHEM 2121, CHEM 2136 (Analytical Chemistry I lecture and lab, 5 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment (A), 4 ch, Wi);
-ENVS 2003 (Introduction to Environmental Studies, 3 ch, Fa or Wi);
-PHYS 2902 (Environmental Physics, 3 ch, Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Climate Change: ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001(Resource Management Issues, Ethics and Communication I, 4 ch, Fa).
Other courses (22 ch):
One of: ESCI 3482 (Mineral Resources, Economics, and the Environment, 3 ch, Wi) or ESCI 3492 (Petroleum Geoscience (A), 4 ch, Wi)
One of: ESCI 3631 (Geochemistry of Natural Waters (A), 4 ch, Fa); ESCI 4501 (Applied Geophysics I, 4 ch, Wi); ESCI 4512 (Applied Geophysics II, 4 ch, Fa)
-Three stream courses from the list below (minimum 9 ch);
-Two Arts electives, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 3117 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa).
List of stream electives:

ESCI 2522 Theory of the Earth, 3 ch
ESCI 3131 Igneous and Metamorphic Rocks, 4 ch
ESCI 3322 Structural Geology II, 4 ch
ESCI 3411 Rock Mechanics, 4 ch
ESCI 3482 Mineral Resources, Economics, and the Environment, 3 ch
ESCI 3492 Petroleum Geoscience (A), 4 ch
ESCI 3621 Exploration Geochemistry (A), 4 ch
ESCI 3703 3rd Year Field School (2 weeks), 5 ch (before Fall classes of 4th Year)
ESCI 3713 Geoenvironmental Field School (2 weeks) (A), 5 ch (after April exams)
ESCI 4212 Sedimentary Environments, Landforms, and Sequences (A), 4 ch
ESCI 4401 Applied Glacial Geology, 4 ch
ESCI 4412 Applied Rock Mechanics (A), 4 ch
ESCI 4461 Economic Geology I, 4 ch
ESCI 4472 Economic Geology II (A), 4 ch
ESCI 4501 Applied Geophysics I, 4 ch
ESCI 4512 Applied Geophysics II, 4 ch
ESCI 4612 Isotope Geochemistry (A), 3 ch

Honours program (150 ch)
Same courses as for a Major program, plus ESCI 4900 (Thesis Project, 8 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. In the second term of a student's next-to-last year of undergraduate study, a student should approach a faculty supervisor to arrange a thesis topic and schedule. A written request for admission to the program then must be submitted to the Chair of Department **prior to** the last day to add classes in the Fall (Winter) term of the student's final year. The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

B5) Stream in Sun-Earth Interaction
Among the many challenges that humanity faces at this beginning of the 21st century are concerns arising from climate change and various impacts on societies resulting from the interaction of Earth with the Sun. To face these challenges requires advancement of our knowledge and understanding of the dynamics of the Sun and its effects on the Earth's magnetosphere, ionosphere and atmosphere. The goal of the "Sun-Earth Interaction" stream is to provide a curriculum that will focus on the study of various physical processes taking place in the solar-terrestrial environment,

and quantify the energy transport mechanisms that drive life on planet Earth.

Major program (145 ch)
1st Year (18 ch + 19 ch)
Fall: PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1091; CHEM 1001, CHEM 1006, ESCI 1012, ESCI 1017; MATH 1003 or MATH 1053; SCI 1001.
Winter: PHYS 1052 or PHYS 1062 or PHYS 1072, PHYS 1092; CHEM 1012, CHEM 1017, ESCI 1001, ESCI 1006; MATH 1013 or MATH 1063; SCI 1002.
2nd Year (18 ch + 17 ch)
Fall: PHYS 2311 (Mechanics I, 4 ch); PHYS 2351 (Quantum Physics, 3 ch); MATH 2003 (Intermediate Mathematics I, 3 ch); BIOL 1001, BIOL 1006 (Biological Principles I, lecture and lab, 5 ch); CHEM 2421 (Organic Chemistry I, lecture, 3 ch).
Winter: PHYS 2312 (Mechanics II, 3 ch); MATH 2013 (Intermediate Mathematics II, 3 ch), MATH 2213 (Linear Algebra I, 3 ch); BIOL 1012, BIOL 1017 (Biological Principles II, lecture and lab, 5 ch); CHEM 2422 (Organic Chemistry II, lecture, 3 ch).
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 73 ch for a Major)
Core courses (32 ch in physics + 35 ch in other core courses):
-Fall physics courses: PHYS 2331 (Research Skills, 3 ch), PHYS 2341 (Thermal Physics, 3 ch), PHYS 3331 (Methods of Theoretical Physics, 4 ch), PHYS 3351 (Quantum Mechanics I, 4 ch), PHYS 3883 (Atmospheric Physics (A), 3 ch);
-Winter physics courses: PHYS 2372 (Waves, 3 ch), PHYS 2902 (Environmental Physics, 3 ch), PHYS 3322 (Electromagnetism I, 3 ch), PHYS 3342 (Statistical Physics, 3 ch), PHYS 3752 (Atomic and Molecular Physics (O), 3 ch);
Also:
-BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch, Fa);
-ESCI 3271 (Paleontology, 4 ch, Fa -required if planning to take ESCI 3292 Climate Change) or ESCI 2211 (Sedimentology and Stratigraphy, 4 ch, Fa), or ESCI 2602 (Principles of Geochemistry, 4 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment (A), 4 ch, Wi);
-ENVS 2003 (Introduction to Environmental Studies, 3 ch, Fa or Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Field Studies: one of BIOL 1846 (New Brunswick Plants and Their Habitats, 4 ch, Su), BIOL 3383 (Research Foundations in Field Ecology (O), 4 ch, Su), BIOL 4443 (International Ecology Field Course (A), 4 ch, Wi), ESCI 1703 (Field School (1 week), 3 ch, Su), or equivalent;
-Climate Change: one of BIOL 4351 (Climate Change and Environmental Response, 3 ch, Fa), ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: one of FOR 1285 (Introduction to GIS, 3 ch, online), FOR 2281 (GIS with Applications in Forestry and Environmental Management, 3 ch, Fa or Wi), GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001 (Resource Management Issues, Ethics and Communication I, 4 ch, Fa).
Other courses (6 ch):
-Two Arts electives, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 3117 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa).

Honours program (153 ch)
Same courses as for a Major program, plus PHYS 4338 (Advanced Research Project, 8 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. Students must have arranged with the Department for an appropriate project by October of their final year and must submit a report to the Department. The deadline for the report is decided and circulated each year, but is usually late in March. Honours student must achieve a minimum final CGPA of 3.0 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

B6) Stream in Water-Earth Interaction
Across our environment, water has the capacity to dissolve solids from the earth's surface and substrate, transport the solutes, and precipitate new materials. The solutes can be essential nutrients for life, or toxic contaminants. When flowing as surface- or ground-water, it may also remove, move, and deposit solid material. The "Water-Earth Interaction" stream provides the student with the relevant science underpinning the global water supply and water quality, river and coastal erosion, and siltation. Electives allow students to further investigate any interest in hydrogeochemistry, biosphere interactions, or water management. Students particularly interested in management aspects should consider the Water Resources Management Major in the ENR Program.

Major program (142 ch)
1st Year (18 ch + 19 ch)
Fall: ESCI 1012, ESCI 1017; CHEM 1001, CHEM 1006; MATH 1003 or MATH 1053; PHYS 1051 or PHYS 1061, PHYS 1091; SCI 1001.
Winter: ESCI 1001, ESCI 1006; CHEM 1012, CHEM 1017; MATH 1013 or MATH 1063; PHYS 1052 or PHYS 1062, PHYS 1092; SCI 1002.
2nd Year (20 ch + 17 ch)
Fall: ESCI 2131 (Earth and Planetary Materials, 4 ch), ESCI 2211 (Sedimentology and Stratigraphy, 4 ch), ESCI 2602 (Principles of Geochemistry, 4 ch); BIOL 1001, BIOL 1006 (Biological Principles I, lecture and lab, 5 ch); one Arts elective (3 ch, see suggestions below).
Winter: BIOL 1012, BIOL 1017 (Biological Principles II, lecture and lab, 5 ch); MATH 1503 or MATH 2213 (Introduction to Linear Algebra, 3 ch); PHYS 2902 (Environmental Physics (A), 3 ch); STAT 2264 (Statistics for Biology, 3 ch); ENVS 2003 (Introduction to Environmental Studies, 3 ch).
3rd and 4th Year (Fa = Fall term, Wi = Winter term, Su = Summer term; should add to minimum of 69 ch for a Major)
Core courses (45 ch)

-BIOL 2003, BIOL 2008 (Ecology lecture and lab, 6 ch, Fa);
-CHEM 2121, CHEM 2136 (Analytical Chemistry I lecture and lab, 5 ch, Fa);
-ESCI 3631 (Geochemistry of Natural Waters (A), 4 ch, Fa);
-ESCI 3442 (Geohydrology, 4 ch, Wi);
-ESCI 4452 (Environment Impact Assessment (A), 4 ch, Wi);
-SCI 4999 (Interconnections in Environmental Sciences, 3 ch, Final year);
-Field Studies: ESCI 3713 (Geoenvironmental Field School (2 weeks) (A), 5 ch, after April exams);
-Climate Change: ESCI 3292 (Climate and Environmental Change Through Time (A), 4 ch, Wi);
-GIS: GGE 3423 (Introduction to GIS, 4 ch, Fa);
-First Nations Studies: one of ABRG 3684 (Aspects of Maliseet and Mi'kmaq Culture, 3 ch, Wi); ENR 3000 (Indigenous Issues & Perspectives in Natural Resources Stewardship, 3 ch, Fa);
-Ethics: one of PHIL 2201 (Introduction to Ethics, 3 ch, Fa); PHIL 2206 (Environmental Ethics, 3 ch, Wi); ANTH 4024 (Anthropology and Ethics (O), 3 ch); ENR 1001(Resource Management Issues, Ethics and Communication I, 4 ch, Fa).
Other courses (23 ch):
One pairing from the following (8 ch):
-ESCI 2321 (Structural Geology 1, 4 ch, Wi) and ESCI 4401 (Applied Glacial Geology, 4 ch, Fa);
-ESCI 2321 (Structural Geology 1, 4 ch, Wi) and ESCI 4512 (Geophysics 2, 4 ch, Fa)
-ESCI 3271 (Paleontology, 4 ch, Fa) and ESCI 3282 (Introductory Oceanography and Paleoceanography (A), 4 ch, Wi);
-Four stream courses from the list below (minimum 12 ch);
-One, or two (if none taken in 2nd Year), Arts elective, e.g., ECON 1013 or ECON 1014 (Microeconomics, 3 ch, Fa or Wi), ECON 3755 (Environmental Economics, 3 ch, Fa), ECON 3766 (Economics of Climate Change (A), 3 ch), ANTH 3117 (Human Systems of Exchange: Nature and Culture, 3 ch), PHIL 3422 (Philosophy of Science, 3 ch), POLS 1803 (Politics of Climate Change (A), 3 ch, Fa).
List of stream electives:
ESCI 2142 Mineralogy and Petrology, 4 ch
ESCI 2321 Structural Geology 1, 4 ch
ESCI 2703 2nd Year Field School (2 weeks), 5 ch, after April exams
ESCI 3271 Paleontology, 4 ch
ESCI 3282 Introductory Oceanography and Paleoceanography (A), 4 ch
ESCI 3482 Mineral Resources, Economics, and the Environment, 3 ch
ESCI 3492 Petroleum Geoscience (A), 4 ch
ESCI 4212 Sedimentary Environments, Landforms, and Sequences (A), 4 ch
ESCI 4401 Applied Glacial Geology, 4 ch
ESCI 4501 Applied Geophysics I, 4 ch
ESCI 4512 Applied Geophysics II, 4 ch
BIOL 2063 and BIOL 2068 Biological Diversity lecture and lab, 6 ch
BIOL 3633 Biological Oceanography, 3 ch
BIOL 4773 River and Lake Ecosystems (A), 3 ch

BIOL 4973 Topics in Aquatic Ecology, 3 ch
CHEM 2201 Inorganic Chemistry I, 3 ch
CHEM 2401 or CHEM 2421 Organic Chemistry I, 3 ch
CHEM 2416 Organic Chemistry Laboratory I, 2 ch
CHEM 3122 Analytical Chemistry II, 3 ch
CHEM 3137 Analytical Chemistry Laboratory II, 2 ch
ENR 2114 Water Sustainability: Practice and Technology (O), 3 ch
ENR 2531 Introduction to Hydrometeorology Systems, 3 ch
ENR 3201 Urban Hydrology and Water Management, 3 ch

Honours program (150 ch)
Same courses as for a Major program, plus ESCI 4900 (Thesis Project, 8 ch). Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the Honours program. In the second term of a student's next-to-last year of undergraduate study, a student must approach a faculty supervisor to arrange a thesis topic and schedule. A written request for admission to the program then must be submitted to the Chair of Department **prior to** the last day to add classes in the Fall (Winter) term of the student's final year. The Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. A student completing all course requirements for Honours but with a CGPA below 3.0 will be given a Majors degree.

GENERAL SCIENCE OPTION

This option presents students with the opportunity to get a broader science exposure by concentrating on two areas of science while taking many electives. While General Science does not give a major in any discipline, it will have to meet the minimum requirement equivalent to the minor programs in two of the selected science disciplines beyond first year. This degree has largely been used by students who planned to follow it with a second degree, e.g. in education, or a health profession.

First Year (38 ch)
The first year in General Science follows the regulations for First Year Science given in the Curriculum Section under "BACHELOR OF SCIENCE", but students must include MATH 1003 or MATH 1053 and at least a term of lectures in each of Biology, Chemistry, Earth Sciences, Physics and Economics or Psychology. Eight credit hours of coherent First year laboratory courses are chosen to meet future prerequisite requirements.

Second, Third and Fourth Years (96 ch minimum)
A student must choose two science disciplines from Biology, Chemistry, Earth Sciences, Mathematics/Statistics, Physics and Economics or Psychology for areas of concentration. Courses chosen must be consistent with the requirement of the minor programs of the two selected disciplines above first year. The remainder of the 96 credit hours will be used for approved electives and courses required to meet the prerequisite for the core courses. The guidelines given below should be followed for choosing electives. Course selections must be pre-approved and reviewed annually by a General Science advisor.

Guideline for choosing electives:

1. A minimum of 12 ch of courses must be chosen from those offered by the Faculty of Arts, 6 ch of which must have a substantial writing component as designated with a [W] in the calendar description. Courses in History of Science and ENGL 1103, ENGL 1144 are strongly recommended electives.
2. Courses from disciplines outside of the selected concentrations that are used as *Prerequisites* for the core courses are regarded as electives.
3. Also acceptable as electives are additional science courses (except for those that cannot be taken for credit by Science students) and approved courses from other faculties.

DISTINCTION IN GENERAL SCIENCE

The BSc with Distinction in General Science will be awarded to students who attain a cumulative grade point average of 3.7 or greater in the General Science option.
NOTE: The General Science options on the Fredericton and Saint John campuses are different from each other. For regulations governing the General Science option offered on the Saint John campus, see the Saint John Academic Programs section of this Calendar.

BACHELOR OF MEDICAL LABORATORY SCIENCE (BMLS)

The degree of Bachelor of Medical Laboratory Science (BMLS) is offered through the Faculty of Science in partnership with the New Brunswick Community College in Saint John (NBCC-SJ). Enrolment will be limited and based on availability of seats in the Medical Laboratory Technology (MLT) program at NBCC-SJ. Students may apply to enter the program after successful completion of first year Science and will be accepted into the BMLS degree with approval from the program Director. The BMLS degree requires completion of the MLT program either prior to or after completion of 84 credit hours of courses at UNB. For graduation, students must have completed the UNB portion of the degree as well as 2.5 years of the MLT program at NBCC-SJ and have passed the Canadian Society for Medical Laboratory Science (CSMLS) exams required for professional practice.

NOTE: Students who already have the MLT certification from NBCC-SJ or any other accredited Canadian MLT program can be admitted to the BMLS degree with no limitation on enrolment. International students cannot be admitted to the BMLS degree due to restrictions on acceptance of such students at NBCC-SJ

First Year (31 ch)

- BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017
- CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017
- MATH 1003
- ESCI 1001, ESCI 1012, OR PSYC 1013, PSYC 1023, OR PHYS 1051, PHYS 1052, or PHYS 1071, PHYS 1072
- SCI 1002

Second and Third Years (54 ch)

- One of the pairs (BIOL 2013 and BIOL 2018) or (BIOL 2053 and BIOL 2103), BIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068, BIOL 2251, BIOL 2792
- CHEM 2401
- STAT 2263 or STAT 2264
- Plus 24 ch that includes at least two 3rd or 4th year Biology courses from the list of Science and Arts electives

Total credits must equal 85 ch

List of Potential Science Electives:

BIOL 1711 (Human Anatomy I) - 4 ch
BIOL 2501 (Pathophysiology I) - 3 ch
BIOL 2513 (Pathophysiology II) - 3 ch
BIOL 3033 (Cell Signaling) - 3 ch
BIOL 3043 (Cell Biology) - 3 ch
BIOL 3162 (Developmental Biology) - 3 ch
BIOL 3261 (Microbial Physiology) - 3 ch
BIOL 3311 (Immunobiology) - 3 ch
BIOL 3493 (Introduction to Virology) - 3 ch
BIOL 3593 (Introductory Histology) - 4 ch
BIOL 3673 (General Parasitology) - 3 ch
BIOL 3802 (Animal Physiology) - 3 ch
BIOL 3908 (Lab Studies in Vertebrate Physiology) – 3 ch
BIOL 4043 (Cellular Metabolism) – 3 ch
BIOL 4123 (Evolutionary Medicine) - 3 ch
BIOL 4182 (Embryology) - 4 ch
CHEM 2121 (Analytical Chemistry I - 3 ch

List of Potential Arts Electives:

ANTH 3502 (Medical Anthropology) - 3 ch
PHIL 3207 (Health Care Ethics) - 3 ch
PSYC 1013 (Introduction to Psychology I) - 3 ch
PSYC 1023 (Introduction to Psychology II) - 3 ch
PSYC 2703 (Foundations of Biological Psychology) - 3 ch
PSYC 3033 (Health Psychology) - 3 ch
SOCI 2375 (Sociology of Health, Illness and Medicine) - 3 ch

NOTE: Other Arts and Science electives can be approved by the program Director/program Advisor

PRE-PROFESSIONAL PREPARATION

It is not the policy of the Science Faculty to set out rigid pre-professional programs. Each professional school has its own entrance requirements and it is necessary that the student ascertain these requirements in order to be sure of qualifying as a candidate for admission to that particular school. UNB does offer the courses necessary to qualify a student for entrance into professional programs.

Experience has shown that, where possible, it is highly desirable for the pre-professional student to obtain a bachelor's degree before applying for entrance to the professional school.

Students interested in meeting the entrance requirements for any professional program should meet with an assistant dean for advice before selecting their courses.

INTERDISCIPLINARY AND CONCURRENT DEGREE PROGRAMS

BACHELOR OF ARTS AND SCIENCE (BAS)

The Faculties of Arts and Science at UNB in Fredericton are co-operating to make it possible for a student to combine Arts and Science in this four-year degree program.

This Joint Program allows students

- to experience academic work in both Faculties before committing themselves to a specialization;
- to gain a broader and more systematic exposure to disciplines outside that specialization; and
- to prepare for subsequent degree programs that permit or encourage a broader distribution of courses; such programs include the General Science Program and various preprofessional programs leading to study in dentistry, medicine, veterinary medicine, optometry, and physiotherapy.

To be admitted to the Joint Arts and Science program, students must meet the entrance requirements for the BAS as outlined in the Admission Requirements Table under Admission Regulations.

To earn a BAS degree, students must complete the requirements of a Supplementary Major in an Arts subject and a Specialization in a Science subject. The requirements for a Supplementary Major are the same as those for one subject taken as part of a Double Major.

Within Science, students can specialize in one of the following subjects: Biology, Chemistry, Earth Sciences, Mathematics and Statistics, Physics, Economics (unless already selected as an Arts program), Psychology (unless already selected as an Arts program). Within Arts, students can select a Supplementary Major in one of the following areas: Anthropology, Archaeology, Classical Studies, Classics, Drama, Economics, Economics Studies, English, French, German, German Studies, History, International Development Studies, Law in Society, Media Arts & Cultures, Philosophy, Political Science, Psychology, Sociology, Spanish, Gender and Women's Studies, Comparative Cultural Studies.

Programs of Study

First Year

1. ARTS 1001 and ARTS 1002 Development of "Western" Thought: Parts 1 and 2. Note that students who have successfully completed either ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 and ARTS 1002 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or 1053 included), 4 accompanied by labs. The choice of lecture and lab courses is dictated by the particular area of Science in which the student intends to specialize, and thus decisions about which lecture and lab courses a student takes should be made in consultation with a Science Faculty advisor.
3. 6 ch (in any one discipline) chosen from either Humanities (Classics, English, History, Media Arts & Cultures, Philosophy, Comparative Cultural Studies), Languages (Ancient Greek, Chinese, French, German, Japanese, Latin, Modern Greek, Russian, Spanish), or Social Sciences (Anthropology, Archaeology, Economics, Political Science, Psychology, Sociology).

Second Year

1. Two additional term lecture courses in first-year Science. Whether these need to be accompanied by labs depends upon the area of Science the student has chosen to specialize in, and as such, these courses should be chosen in consultation with a Science Faculty advisor.
2. 12 ch (6 ch in each of 2 disciplines) chosen from Arts, including at least one discipline from a group (Humanities, Languages, Social Sciences) not chosen in the first year.
3. At least 18 ch of Science courses chosen in consultation with and pre-approved by the Science Faculty advisor.

Students will normally select a Supplementary Major in Arts and a Specialization in Science at this time, and should discuss the options with their Arts and Science advisors.

Third and Fourth Years

The exact content of years 3 and 4 will depend upon the particular Arts and Science areas chosen. Students take advanced courses to give them a thorough understanding of their chosen subjects and prepare them for an immediate career or further work at graduate school. Students who

elect to take a Single Major or Honours in Arts and/or Science may extend their program beyond the four years, depending on the subjects chosen.

1. A minimum of 36 ch total in Science chosen in consultation with, and pre-approved by, the student's Science advisor. At least half of these courses must be at the 3000 or 4000 level.
2. 36 ch total chosen in consultation with, and pre-approved by, the student's Arts Major advisor, 18 ch of which must be at the 3000 or 4000 level.

Students should note that at least half the advanced-level credits counted towards the BAS degree must be from courses taken at the University of New Brunswick. Exceptions may be considered by the Deans of Arts and Science. Students should also note that, in any given year, their course load may not be evenly balanced between Arts and Science courses. Students should plan to meet with advisors from both Faculties on an annual basis to ensure that the selected courses satisfy *Prerequisites* for upper level courses and take account of courses offered in alternating years, and other program requirements.

Students who enter the BAS program may opt to move into the BA program, the BSc program, or the concurrent BA/BSc program at any stage. With the exception of laboratory courses, and SCI 1001 and SCI 1002, all courses taken during the first two years can be counted towards either a BA or a BSc degree (or both). Approved specialized Science laboratory courses will count towards the BSc degree or the Concurrent Degree in Arts and Science (BA/BSc).

Instead of graduating with a BAS at the end of the four-year program, students may continue for a fifth year to earn both a BA and a BSc, two degrees, with a Major (or Honours) in an Arts discipline and a Major (or Honours) in a Science discipline - for example, BA (History) and BSc (Physics). See the following section for the five-year concurrent degree program in Arts and Science.

For further details on subjects in Arts, see the Bachelor of Arts portion of the Fredericton Programs section of this Calendar.

CONCURRENT DEGREES IN ARTS AND SCIENCE (BA/BSc)

To be admitted to the Arts and Science program, students must meet the entrance requirements of both BA and BSc degrees given in the Admission Requirements Table under Admission Regulations.

The concurrent BA/BSc program is designed as a five-year program. To receive both degrees, students need a Major (or Honours) in an Arts discipline and a Major (or Honours) in a Science discipline - for example, BA (History) and BSc (Physics).

Within Science, students can major or honour in one of Biology, Chemistry, Earth Sciences, Mathematics and Statistics, Physics, or one of the Interdepartmental programs such as Biology-Chemistry. Students may also choose as their Science subject either Economics (unless already selected as an Arts program) or Psychology (unless already selected as an Arts program). Within Arts, students can major or honour in one of the following areas: Anthropology, Archaeology, Classical Studies, Classics, Economics, Economics Studies, English, French, German, German Studies, History, Media Arts & Cultures, Philosophy, Political Science, Psychology, Sociology, Spanish, World Literature and Culture Studies. In addition, interdisciplinary programs in International Development Studies, Law in Society, and Gender and Women's Studies are available as part of an Arts Double Major or Joint Honours; however, students are advised that completing a Double Major or Joint Honours in Arts will require more credit hours than a Single Major or Honours.

This program is ideal for students with a strong interest in one of the Sciences and one of the Arts disciplines. It is also demanding and requires a serious commitment from the student from the outset and throughout the degree. Its breadth makes it an excellent pre-professional program to prepare for studies in dentistry, medicine, veterinary medicine, optometry, and physiotherapy.

Students who enter the concurrent BA/BSc program may opt to move into either the BA or the BSc program at any stage. With the exception of labs, and SCI 1001 and SCI 1002, all courses taken during the first two years can be counted towards either a BA or a BSc (or both). Approved specialized Science labs count towards the BSc degree.

Students in the concurrent program can count many of their courses toward the requirements of both degrees, so it is important to select courses carefully from the outset. Students must seek advice and pre-approval from departmental/Faculty advisors of both Faculties at every level from pre-entry enquiries through to graduation.

Program of Study (5 Years)

First Year

1. ARTS 1001 and ARTS 1002 Development of "Western" Thought: Parts 1 and 2. Note that students who have successfully completed either ARTS 1000 or ARTS 1100 have already completed the equivalent requirement and cannot take ARTS 1001 and ARTS 1002 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or 1053 included), 4 accompanied by labs. The choice of lecture courses and lab courses is dictated by the particular area of Science in

which the student intends to major or honour, and thus decisions about which lecture and lab courses a student takes should be made in consultation with a Science Faculty advisor.

3. 6 ch (in any one discipline) chosen from either Humanities (Classics, English, History, Media Arts & Cultures, Philosophy, Comparative Cultural Studies), Languages (Ancient Greek, Chinese, French, German, Japanese, Modern Greek, Latin, Russian, Spanish), or Social Sciences (Anthropology, Archaeology, Economics, Political Science, Psychology, Sociology).

Students will select their Science Major or Honours discipline at this point. Throughout the program, advice is available on the options and course requirements. Students should have written pre-approval from the appropriate Arts and Science advisors for all programs and course selection.

Second Year

1. Two additional term lecture courses in first-year Science. Whether these need to be accompanied by labs depends upon the area of Science the student has chosen to major or honour in, and as such, these courses should be chosen in consultation with a Science Faculty advisor.
2. 12 ch (6 ch in each of 2 disciplines) chosen from Arts, including at least one discipline from a group (Humanities, Languages, Social Sciences) not chosen in the first year.
3. At least 18 ch of Science courses (certain Science programs may require more than the minimum) chosen with pre-approval from the student's Science program advisor in the respective department.

Students will select their Arts Major(s) or Honours at this time with the help of Faculty and departmental/program advisors.

Third, Fourth and Fifth Years

The exact content of years 3, 4, and 5 will depend upon the particular Arts and Science disciplines chosen. Students take advanced courses to gain a thorough understanding of their chosen disciplines and to prepare for an immediate career or further work at graduate school. Students who elect to take Honours in Arts and/or Science may extend their program beyond the five years, depending on the subjects chosen.

1. Courses in Science will be chosen in consultation with, and pre-approved by, the student's Science advisor to meet the requirement of a Science degree.
2. A total of 54 ch of courses chosen in consultation with, and pre-approved by, the student's Arts Major advisor, 36 ch of which must be upper level courses.

Students should note that at least half the advanced level credits counted towards a Major/Honours/Minor in an Arts subject must be from courses taken at the University of New Brunswick. The same regulation also applies to Science courses. Exceptions may be considered by the Dean of Arts and the Dean of Science, respectively.

Students should note that, in any given year, their course load may not be evenly balanced between Arts and Science courses. Students should plan to meet with advisors from both Faculties on an annual basis to ensure that the selected courses satisfy *Prerequisites* for upper level courses and take account of courses offered in alternating years and other program requirements.

CONCURRENT BCS/BSc DEGREE PROGRAM

Most scientific careers now require a thorough background in computing. Many careers in the computing field require primary knowledge in a scientific application area. The Faculty of Science and the Faculty of Computer Science offer students a program in which to pursue a science major and a complete computer science education. Students may enrol in a concurrent degree program in which at the end of five to five-and-a-half years of study a student will graduate with both a BSc with a major in Biology, Chemistry, Earth Sciences, Mathematics, or Physics, and a BCS. Participation in the Computer Science Co-op program will lengthen the student's program. The program is designed so that if a student decides to opt for BCS alone, the adjustments can be easily made. Students in the concurrent degree program are able to count many of their courses toward the requirements of both degrees so it is important to select courses carefully from the outset, in consultation with an advisor.

Admission requirements: Students must satisfy the admission requirements for both the Bachelor of Computer Science and the Bachelor of Science as given in <u>Section B</u>.

Course Selections While the first and second years given below are typical, the third, fourth and fifth year will depend on the CS and Science degree programs chosen (Major, Honours, etc.)

Year 1 CS 1073, CS 1083, two of (CS 1103, CS 1203, or CS 1303), MATH 1003, MATH 1013, (or MATH 1053, MATH 1063) plus four term lecture courses in first year science, all four of which are accompanied by labs, chosen from Biology, Chemistry, Physics, and Earth Sciences. The particular sciences and labs chosen will depend on the intended Science program. MATH 2203 may be substituted for CS1303. Students planning to major or honour in Mathematics are strongly recommended to choose MATH 2203 rather than CS 1303. Credit will be given for only one of CS 1303 and MATH 2203.

Year 2 One of (CS 1103, CS 1203, or CS 1303), CS 2043, CS 2263, MATH 2213, one of (CS 2333, CS 1103, or CS 2383), MATH 2003, plus 6 term-courses in Science (minimum 18 ch) chosen in consultation and with the approval of the advisor in your chosen Science discipline.

Year 3, 4, 5 These must be arranged in consultation with your CS and Science advisors and will be different for each student.

BACHELOR OF SCIENCE IN ENGINEERING

FACULTY OF ENGINEERING

General Office:	Head Hall, Room C-28
Mailing Address:	Faculty of Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4570
Fax:	(506) 453-4569
Email:	deaneng@unb.ca
Website:	http://www.unb.ca/fredericton/engineering
Dean:	Chris Diduch, BScE, MScE, PhD, PEng
Associate Dean:	Michel Couturier, BScE, MScE, PhD, PEng
Assistant Dean:	Richard Tervo, BSc, MSc, PhD, PEng
Assistant Dean Year 1:	Frank Collins, BScE, PEng

Degree programs in engineering (BScE) are offered by the Faculty of Engineering in the following disciplines:

Chemical Engineering
Civil Engineering
Electrical Engineering
Geomatics Engineering
Mechanical Engineering

Degree programs which are offered jointly between the Faculty of Engineering and other Faculties are:

Geological Engineering: A BScE degree offered jointly with the Faculty of Science.

Software Engineering: A BScSwE degree offered jointly with the Faculty of Computer Science.

Students completing the above degree programs in Engineering will have fulfilled the academic requirements for licensure as a professional engineer in Canada. The following regulations apply to all of the above programs.

General Information

Engineering Entrance Program

Students admitted to the Engineering Entrance Program are considered fully-accepted students with an acceptance condition that the missing requirement be met by taking an approved University course before transfer to the First Year Engineering Program. Conditions of acceptance will be provided to the students with their letter of acceptance.

Entrance students must complete at least 12 credit hours per term and remain in good academic standing. Courses taken while enrolled in the Engineering Entrance Program will be considered for degree credit by the program into which the student is ultimately enrolled.

The Engineering Entrance Program is a terminal program. Students who fail to meet conditions of their acceptance or rules of the program within their first academic year will be required to withdraw from the Faculty. Students who withdraw in this manner will be eligible to apply for admission to other faculties.

Transfer Credits (Complementary Studies Courses): Students admitted with advanced standing from non-university institutions must complete a minimum of 6 ch of complementary studies courses at a university. The intention is that engineering students complete at least half of their complementary studies courses (as defined by the Canadian Engineering Accreditation Board) in a university setting. A 70% minimum is required for transferring course credit from community colleges and a minimum grade of C (or 55% in the absence of a letter grade) is required for transferring course credit from another university.

Transfer Credits (other than Complementary Studies Courses): Other courses (Science, Mathematics, Computer Science, Engineering, etc.) may be accepted for transfer credit according to accepted university practice. A 70% minimum is required for transferring course credit from community colleges and a minimum grade of C (or 55% in the absence of a letter grade) is required for transferring course credit from another university.

Options in Engineering: Most engineering students do not have to choose an option within their degree program, although there are several options available for students with particular interests. All departments offer a range of electives which provide opportunity for some degree of concentration. In order to graduate, a student must satisfy all program requirements.

The following options are elaborated upon in individual program descriptions on the following pages.

- Biomedical Engineering Option
- Cadastral Surveying Option
- Computer Engineering Option
- Energy Conversion Engineering Option
- Mechatronics Option

Engineering and the Environment: Engineering practice and environmental concerns cannot be separated; therefore topics of environmental concern are fundamental to all engineering disciplines. Engineering students interested in the environment are encouraged to choose the discipline most closely related to their interest. The following list is not all inclusive, but gives some indication of possible areas of interest.

- Air and Water Quality
- Conservation and Management of Resources
- Energy Conversion
- Energy Utilization
- Environmental Geotechnics
- Environmental Impact Assessment
- Environmental Information Systems
- Groundwater Development & Protection
- Hazard Mapping
- Hydrology
- Instrumentation and Control
- Integrated Renewable Resource Management
- Machine/Environment Interactions
- Mapping of Land and Water Resources
- Monitoring of Topographic Change
- Pollution Control
- Recycling
- Remote Sensing of the Environment
- Resource Operations Management
- Waste Disposal
- Water and Waste Water Treatment

Students with particular interest in environmental engineering topics are encouraged to pursue a Minor in Environmental Studies, which is available for concurrent study in the Faculty of Forestry and Environmental Management.

Minor in Engineering: Further to the general regulations in Section B. V of the UNB Undergraduate Calendar, engineering students may earn a minor from another engineering program. A minor consists of at least 24 credit hours of courses which are not core courses for the student's degree.

The courses used for a minor shall be chosen in consultation with the academic advisor in the student's home program and the academic adviser in the engineering program offering the minor. Students in a BScE or BScSWE program shall have the program designation of the minor shown on their transcript. Designation of the minor shall be approved by the Office of the Dean of Engineering.

Minors are elaborated upon in individual program descriptions on the following pages.

Minor in Applied Science: Non-engineering students may take engineering courses from one or several engineering degree programs for a minor in Applied Science. The minor must consist of at least 24 credit hours of engineering courses which shall be approved by the Office of the Dean of Engineering and are not core courses for the student's degree.

1st Year Program

All students who enter Engineering directly from high school are enrolled initially as undeclared students (BSE.UNDC) and take a "Common First Term" of courses:

First Term
PHYS 1081
MATH 1003
MATH 1503
ENGG 1001, ENGG 1003, ENGG 1015
CS 1003

Undeclared students may apply for early enrolment into a program any time after confirming acceptance through a tuition deposit and before the end of Fall Term classes. This "Application for Early Enrolment" must be made through the Dean of Engineering Office. The Department offering the program and the Dean of Engineering approve program enrolments. Students strongly considering software engineering are encouraged to apply for early enrolment immediately upon submitting their tuition deposit.

Students must indicate program preferences to the Dean of Engineering Office prior to the last day of Fall Term classes. Space may be limited in some programs. Enrolment to these programs will be based on space availability and competitive assessments of academic performance after first or second terms. All students who have been accepted to the Faculty are guaranteed a program of study by the end of their first year.

Students who remain BSE.UNDC for the winter semester in their first year are encouraged to seek academic advising on courses prior to the start of Winter Term.

General Regulations

1. The minimum requirement for an engineering degree is the accumulation of 160 credit hours. Additional requirements may be found within the descriptions of individual programs
2. Credit hours for courses are listed with course descriptions.
3. Students should refer to Section B of this Calendar for regulations regarding academic probation and withdrawal.
4. A minimum grade of C is required for all courses used for credit towards an engineering degree.
5. A student who fails three times to achieve at least a "C" grade in any given course (excluding withdrawals and course attempts designated with the # notation) will be required to withdraw from the Engineering program.
6. The Bachelor of Science in Engineering degree must be completed within eight calendar years of initial registration in the Faculty of Engineering. Students who do not complete their program requirements within this limit will be denied further registration in Engineering. This time limit includes all time during which a student is not in attendance either by personal choice or as a result of suspension or a requirement to withdraw. Extensions will be granted for fall or winter academic terms missed due to co-op work term placements. When a student encounters special circumstances that necessitate an absence from the University for an extended period of time, the student may apply to the Faculty for an extension to the degree time limit. Students transferring into a continuing degree program will have the time limit prorated on the basis of advance credit granted.

Engineering faculty complementary studies electives requirements:

a. To ensure that the spirit of Complementary Studies Electives is achieved, each Engineering student must take for credit at least one 3 ch course from one of the following humanities or social science disciplines: Anthropology, Classics, Literature (English, French, German, Spanish), History, Philosophy, Political Science and Sociology.
b. No more than 3 ch of language courses, including ENGL 1103 may be used for credit as Complementary Studies Electives. Other language courses may be taken, but they would be extra to the degree.
c. University Studies course (e.g. UNIV 0101) and Academic ESL courses (e.g. AESL 1011) cannot be used for credit as Complimentary Studies Electives.

Regulations for Granting a Second UNB Bachelor of Science in Engineering Degree

BScE students or graduates of UNB may apply for admission to and follow a program towards a second engineering undergraduate bachelor's degree. The general regulations of the University and the regulations of the degree program concerned must be satisfied.

Normally, the minimum number of credit hours which must be successfully completed beyond the work required for the first degree would not be less than the normal load of the final academic year in the degree program concerned. More than the minimum number of credit hours, or courses, may be required.

The courses taken must be approved by the Dean and the Department under which the second degree falls. The final decision on the course work requirements for a second undergraduate bachelor's degree shall be a matter of agreement between the Registrar and the Dean after consultation with the Chairs of Departments concerned.

The general regulation that at least half the credit hours for a degree must be taken at this University will apply.

Co-operative Education Programs in Engineering

The UNB Faculty of Engineering seeks to provide opportunities for students and employers to develop relationships that enhance the learning experience for students and present employers with skilled, motivated employees looking to make a career connection. To achieve this, the Faculty of Engineering, through its constituent departments, operates a Co-operative education program (Co-op Program) based on established partnerships with selected employers.

A Co-op team liaises with the academic advisor in each department/program to ensure alignment between students' academic and professional experience objectives. Additional oversight is provided by the Faculty of Engineering Co-op Committee. The effectiveness of the Co-op program in delivering the planned professional internship experience is closely monitored and assessed by the Co-op Office through interactions with the students, company personnel, and UNB.

Co-operative education is available within all engineering departments/programs. Work terms may be 4, 8, 12 or 16 months in duration and are generally interspersed with academic study terms. Specifics can be obtained from the Engineering and Science Co-op Program Office. Prior to applying for Co-op jobs, students will be oriented to the process and will be assisted in preparing resumes and for job interviews. A student retains their full-time status while being on a Co-op work term.

Co-op Program Eligibility and Approval:

1. Student must be registered as full-time student in an undergraduate engineering degree program at UNB.
2. Students must be in good academic standing. However,
   a. A student who has completed the first term of engineering studies at UNB must have a Cumulative GPA of at least 2.7.
   b. A student in terms 2 to 4 of engineering studies at UNB must have a most recent Assessment GPA of at least 2.7.
3. Eligibility and suitability to enrol in the Co-op Program is assessed by the Co-op Office.
4. A detailed degree continuation plan must be submitted by the student to the Co-op Office.
5. The Co-op Office must inform the academic advisor that the student is planning to go on Co-op. A student's degree continuation plan must be included in the notification to the academic advisor.

Planning and Scheduling

1. Work terms usually commence at the beginning of January, May, and September.
2. Academic planning is done in consultation with the academic advisor or designate for the student's specific engineering program.

Co-op Work Term Requirements:

1. Students must have completed at least two terms of full-time engineering-related courses at UNB prior to their first Co-op work term.
2. A student who has only completed the first year of full-time engineering-related courses at UNB will be limited to an initial summer work term of 4 months.
3. A student who has completed two years of full-time engineering-related courses is eligible for work terms of 4 to 16 months.
4. Students must inform the academic advisor and the Co-op Office in writing if they would like to extend a Co-op work term. The decision on the approval of the extension will be made by the Co-op Office.
5. A co-op fee is charged for each 4-month portion of a work term.
6. While on a work term, a student is limited to a maximum of one academic course per academic term. The academic course and the student's work term responsibilities cannot conflict with each other.
7. After the student's final work term, the student must return to UNB for a final term of full-time engineering-related courses to complete their degree requirements.
8. A student is limited to a maximum of 6 work terms totalling no more than 24 months.
9. At the beginning of a work term, a student is enrolled in the student's program respective Co-op course. A student's evaluation by the employer will be taken into consideration with the final work term assessment determined by the Co-op Office. The Co-op work term grade will be shown on the transcript as "Credit" (CR) or "No Credit" (NCR).
10. Co-op Education Designation is awarded upon graduation to those students who have successfully completed a minimum of 12 months of work terms. work terms that total at least 12 months.

More information can be obtained from the Engineering and Science Co-op Program office.

CHEMICAL ENGINEERING

DEPARTMENT OF CHEMICAL ENGINEERING

General Office:	Head Hall, Room D-39
Mailing Address:	Department of Chemical Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4520
Fax:	(506) 453-3591
Email:	chemeng@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/chemical

FACULTY

- Bendrich, Guida, Dipl. Ing. (T.F.H. Berlin), PhD (McM), PEng, Eur. Ing., Prof - 1995
- Chibante, Felipe, BSc Chemistry (McG), PhD (Rice), MArts (Rice), MChem (Rice), Assoc. Prof. - 2007
- Collins, Frank, BScE (UNB), PEng, Associate Teaching Proofessor and Assist. Dean 1st Year - 2002
- Cook, William, BScE, MScE, PhD (UNB), PEng, Prof, Director CNER - 2004
- Eic, Mladen, Dipl. Ing. (Sarajevo), MSc (Zagreb), MSc (Worcester Poly. Inst), PhD (UNB), PEng, Prof – 1990
- He, Zhiben (Ben), BSE Chem Eng, MScE Chem Eng (Shaanxi Univ. Science & Tech), PhD (UNB), PEng, Asst -rof - 2021
- Lowry, Brian, BASc, MASc (Tor), PhD (Cornell), PEng, Assoc Prof - 1995

- Miles, Jamie, Dipl.Eng.(UPEi), BScE, MScE (UNB), PEng, Associate Teaching Professor - 2013
- Ni, Yonghao, BEng (Northwest Inst of Light Industry), MEng, PhD (McG), PEng, Prof, Canada Research Chair in Pulping Technology - 1993
- Palazhchenko, Olga, BSc (Hons) Chemistry, MSc Materials Chemistry (UOIT), PhD Chem Eng (UNB), PEng, Asst. Prof - 2021
- Qu, Yang, BSc Honors (Peking), PhD Biochemistry (Calg), Assoc. Prof. and Cannabis Health Research Chair (Joint-Chemistry) - 2018
- Romero-Zerón, Laura, BSC, MSc (Los Andes), PhD (Calg), PEng, Prof - 2004
- Singh, Kripa, BE (Birla Inst), ME (Asian Inst), PhD (Regina), PEng, Prof (Joint - Civil Eng.) - 2000
- Xiao, Huining, BEng, MEng (Nanjing), PhD (McM), PEng, Prof - 2001

General Information

Chemical Engineering is the discipline of engineering that uses physical sciences to convert raw materials into desired products and services. A chemical engineering education includes a broad background in basic sciences and mathematics and advanced knowledge in the design and operation of process equipment used to produce fuels, plastics, petrochemicals, fertilizers, electricity, pharmaceuticals, paper, etc. This degree program prepares students for direct employment in industry and provides a strong foundation for graduate degrees in engineering, business or law. Students may complete the general program or elect to concentrate their studies on one of two option programs: Biomedical Engineering or Energy Conversion Engineering.

Curriculum

 A minimum of 163 credit hours (ch) is required to obtain a bachelors degree in Chemical Engineering. Twelve credit hours of these are technical electives and twelve credit hours are complementary studies electives. The degree program may be completed in eight terms of study. Students who participate in the Co-Operative Education (Co-Op) program normally complete the program in five years. Students may opt for a program which spans a longer period of time provided all required courses are taken. Details can be obtained by contacting the Director of Undergraduate Studies.

The credit system allows considerable flexibility in designing programs of study but unless care is exercised difficulties may arise with course scheduling. Students are requested to consult with the Academic Advisor or the Director of Undergraduate Studies if they plan to follow a program that differs significantly from the timetable shown in the Program Guide issued at the time of acceptance into the program.

Core Courses

CHE 2003 Fundamentals I - Mass Balances
CHE 2004 Fundamentals II - Mass & Energy Balances
CHE 2012 Engineering Thermodynamics
CHE 2301 Transport Phenomena in Chemical Engineering
CHE 2412 Chemical Engineering Lab I
CHE 2501 General Materials Science
CHE 2506 Materials Science Laboratory
CHE 2525 Fundamentals of Chemical Process Design
CHE 2703 Fluid & Fluid Particle Mechanics
CHE 3123 Chemical Engineering Thermodynamics
CHE 3304 Heat Transfer
CHE 3324 Unit Operations I
CHE 3332 Mass Transfer
CHE 3418 Numerical Methods & Modeling in Chemical Engineering Processes
CHE 3424 Chemical Engineering Lab II
CHE 3434 Chemical Engineering Lab III
CHE 3505 Chemical Process Design
CHE 4101 Chemical Reaction Engineering I
CHE 4601 Process Dynamics & Control
CHE 4341 Unit Operations 2
CHE 4404 Chemical Engineering Lab IV
BIOL 1001 Biological Principles I
CHEM 1982 General Applied Chemistry
CHEM 1987 General Applied Chemistry Laboratory
CHEM 2401 Introductory Organic Chemistry for Non-Chemistry Majors
CHEM 3621 Physical Chemistry II
CHEM 3886 Analytical Chemistry Laboratory for Chemical Engineers
CHEM 3897 Organic Chemistry Laboratory for Chemical Engineers
CHEM 4886 Physical Chemistry Laboratory for Chemical Engineers
PHYS 1081 Foundations of Physics for Engineers
CS 1003 Introduction to Computer Programming
ECE 1813 Electricity & Magnetism
ENGG 1001 Engineering Practice Lecture Series
ENGG 1003 Engineering Technical Communications
ENGG 1015 Introduction to Engineering Design and Problem Solving
ENGG 1082 Mechanics for Engineers
ENGG 4000 Senior Design Project
ENGG 4013 Law & Ethics for Engineers
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
MATH 3503 Differential Equations for Engineers
STAT 2593 Statistics for Engineers

Captstone Design Course. The multidisciplinary design course ENGG 4000 is restricted to chemical engineering students who have completed CHE 3304 and CHE 3505, and are co-registered in CHE 4101, CHE 4341, and CHE 4601. Students who are pursuing a Diploma in Technology Management and Entrepreneurship (DTME) may take TME 4025 in place of ENGG 4000 if they have successfully completed six credit hours of DTME Core Courses and have the approval of the Director of Undergraduate Studies.

Electives

Technical Electives

The Chemical Engineering degree program consists of a minimum of 12 ch of technical electives chosen from the list of courses below. Technical elective courses in chemical engineering are typically designated as a 5000 level course and are offered on a rotating basis. **NOTE** that not every course is offered in each academic year thus students should consult with the Department for more information on planned elective course offerings.

The Department also offers three option programs within its technical elective stream: Energy Conversion Engineering, Biomedical Engineering, and Nuclear Engineering. These options are offered to students wishing to have an area of specialization within the chemical engineering discipline. Those who successfully complete an option will receive a special notation on their university transcript upon graduation. More information on these options is given below.

CHE 1001 Introduction to Chemical Engineering (1 ch)
CHE 5234 Oil & Gas Process Engineering (3 ch)
CHE 5244 Enhanced Oil Recovery Processes (3 ch)
CHE 5254 Polymer Reaction Engineering & Processing (3 ch)
CHE 5264 Oil Sands Technology (3 ch)
CHE 5274 Re-Engineering Waste - A Chemical Engineering Approach (3 ch)
CHE 5313 Energy and the Environment (3 ch)
CHE 5314 Chemical Process Industries (3 ch)
CHE 5413 Air Pollution Control (3 ch)
CHE 5416 Bioseparations Science and Engineering (3 ch)
CHE 5423 Chemical Engineering Practice School (4 ch)
CHE 5522 Nanotechnology (3 ch)
CHE 5714 Electrochemical Engineering (3 ch)
CHE 5724 Special Topics in Chemical Engineering (1 ch)
CHE 5725 Special Topics in Chemical Engineering (2 ch)
CHE 5726 Special Topics in Chemical Engineering (3 ch)
CHE 5734 Chemical Engineering Report (3 ch)
CHE 5735 Thesis (6 ch)
CHE 5744 Nuclear Supply Systems (3 ch)
CHE 5804 Nuclear Chemical Processes (3 ch)
CHE 5824 Corrosion Processes (3 ch)
CHE 5834 Introduction to Nuclear Engineering (3 ch)
CHE 5844 Nuclear Safety and Reliability (3 ch)
CHE 5854 Nuclear Heat Removal (3 ch)
CHE 5855 Reactor Physics (3 ch)
CHE 5877 Advanced Nuclear Systems (3 ch)
CHE 5913 Pulp Production (3 ch)
CHE 5923 Papermaking (3 ch)
CHE 5933 Bio-refining: Principles, Processes and Products (3 ch)
BIOL 2023 Introductory Biochemistry (3 ch)
CE 5421 Water Quality and Treatment (4 ch)
CE 5432 Wastewater Treatment and Pollution Control (4 ch)

Complementary Studies Program

Complementary studies are an important element in engineering education. The Chemical Engineering degree program consists of a minimum of 12 ch of Complementary Studies electives satisfying each of the following core categories:

- *Humanities* - minimum 3 ch (Sociology, Anthropology, History, Classics, Philosophy, Political Science)
- *Business/Management* - minimum 3 ch (Administration, Tech. Management and Entrepreneurship, or select Economics courses)
- *Non-Language* - minimum 3 ch (Humanities, Business or any PSYC, RLS, ENVS, ENR, IDS, RCLP, ARTS, WLCS)
- *Other Approved* - minimum 3 ch (course approved by the Director of Undergraduate Studies)

The Department strongly encourages its students to obtain business-related education through the complementary studies stream and to pursue a diploma in Technology Management and Entrepreneurship, which is offered by the Faculty of Engineering. For more information on integrating this diploma with the undergraduate degree in chemical engineering, please contact the Director of Undergraduate Studies.

Distance Education

CHE 2501 is available by distance education.
Students wishing to take courses from any outside institution as credit towards their degree must receive approval from the Director of

Undergraduate Studies prior to enrolling in the course at the outside institution.

International Exchange Program

The Department offers an opportunity for its students to study abroad and receive course credits towards an undergraduate degree. Students interested in international study must be in good academic standing and receive prior approval from the Department for degree transfer credit. Interested students should consult with the Director of Undergraduate Studies to obtain more information.

Energy Conversion Engineering Option in Chemical Engineering

The chemical engineer must include environmental stewardship as a design requirement in the conversion of energy resources into commodity products and services. This option places emphasis on emerging technologies and societal issues in the energy and environment sector within chemical engineering. The directed path consists of 1 required course, 1 complementary studies elective and 3 technical elective courses (minimum total of 15 ch) selected from the approved lists below. To participate in the option students must obtain Department approval.

Core:
CHE 5313 Energy and the Environment
Complementary Studies Elective: (1 course from the following list):
ECON 3865 Energy Economics (3 ch)
ENVS 2003 Introduction to Environmental Studies (3 ch)
ENVS 2023 Climate Change (3 ch)
ENVS 4001 Environmental Impact Assessment and Management (3 ch)
ENVS 4002 Stakeholder Approaches to Environmental Problem Solving (3 ch)
ENR 2021 Natural Resource Management, Institutions, Policy and Governance (3 ch)
HIST 3925 Technology and Society (3 ch)
Technical Elective: (3 courses from the following list):
NOTE: Course substitutions may be permitted at the discretion of the Director of Undergraduate Studies
CE 5421 Water Quality and Treatment (4 ch)
CE 5432 Wastewater Treatment and Pollution Control (4 ch)
CHE 5234 Oil Refining and Natural Gas Processing (3 ch)
CHE 5244 Enhanced Oil Recovery (3 ch)
CHE 5264 Oil Sands Technology (3 ch)
CHE 5274 Re-Engineering Waste – A Chemical Engineering Approach (3 ch)
CHE 5314 Chemical Process Industries (3 ch)
CHE 5413 Air Pollution Control (3 ch)
CHE 5824 Corrosion Processes (3 ch)
CHE 5834 (3 ch) or ME 5373 Nuclear Engineering (3 ch)
CHE 5933 Biorefining: Principles, Processes and Products (3 ch)
ME 5553 Ocean Wave Energy Conversion (4 ch)
ME 5933 Industrial Ecology (3 ch)

Students with special interest in environmental studies are encouraged to pursue a minor or secondary major in this area through the university's Environmental Studies Program, administered by the Faculty of Forestry and Environmental Management. The Department also encourages interested students to pursue a Masters of Engineering degree in environmental studies after graduation.

Biomedical Engineering Option in Chemical Engineering

Biomedical Engineering is an exciting and growing area of specialization within the Chemical Engineering discipline. The Biomedical Engineering Option in Chemical Engineering is a study path for students wishing to pursue careers in medicine or the health sciences industry. Students who plan on attending medical school are encouraged to seek advising immediately upon entrance into the degree program.

To complete the option program, students must obtain Departmental approval and complete 12 credit hours of technical electives chosen from the list below. Only biomedical option students may use these courses towards the technical elective degree requirements.

Technical Electives:
NOTE: One course substitution can be made at the discretion of the Director of Undergraduate Studies.
Required Course:
APSC 3953 Basis of Biomedical Engineering (3 ch)
BIOL 1711 Human Anatomy 1 (4 ch)
BIOL 2013 Evolutionary Genetics (3 ch)
BIOL 2023 Introductory Biochemistry (3 ch)
BIOL 2792 Human Physiology - Systems (3 ch)
BIOL 3043 Cell Biology (3 ch)
CHEM 4503 ** Biocomputing in Drug Design I (5 ch)
CHEM 3523 Medicinal Chemistry (3 ch)
KIN 2062 * Introductory Biomechanics (3 ch)
KIN 3061 * Advanced Biomechanics (4 ch)
KIN 4163 * Workplace Ergonomic Design And Analysis (3 ch)
ME 5913 Biomechanics (4 ch)
PHYS 5993 Magnetic Resonance Imaging (3 ch)
* Some option courses require that BIOL 2753 be taken as a *Prerequisite*.
** Some option courses require that BIOL 1006 be taken as a *Prerequisite*.

Students with special interest in Biology and Biochemical Engineering are encouraged to pursue a Minor in Biology through the Faculty of Science. Such students should seek advising from the Director of Undergraduate Studies to embark upon this path as soon as possible in the degree program.

Nuclear Power Option in Chemical Engineering

Nuclear Engineering is on the forefront of energy conversion innovation From large nuclear power plants to small modular reactors (SMR), engineers are intimately involved in the development of advanced technologies. Knowledge is power.

The Nuclear Power Option Program is available to all students from the Department of Chemical Engineering. In order to enter the option program students must meet the following conditions:

- Successful completion of 80 ch of the program in Chemical Engineering
- Approval by the Department of Chemical Engineering

In order to complete the option program, students must complete 12 credit hours of technical electives including the core course as indicated below.
Option Core Course (required – 3 ch):

- CHE 5834 Nuclear Engineering (3 ch)

Select 3 of the following courses (9 ch):

- CHE 5744 Steam Supply Systems (3 ch)
- CHE 5804 Nuclear Chemical Processes (3 ch)
- CHE 5824 Corrosion Processes (3 ch)
- CHE 5844 Nuclear Safety and Reliability (3 ch)
- CHE 5855 Reactor Physics (3 ch)
- CHE 5877 Advanced Nuclear Systems (3 ch)

NOTE: One course substitution can be made at the discretion of the Director of Undergraduate Studies.

Co-op Work Term Credit in Chemical Engineering

A student in the Chemical Engineering Undergraduate Program may receive a maximum of 3 ch of Technical Electives (TE) credit when working on an approved project while bein on an 8 months of longer Co-op work term.

CIVIL ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

General Office:	Head Hall, Room H-124
Mailing Address:	Department of Civil Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4521
Fax:	(506) 453-3568
Email:	civileng@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/civil/index.html

FACULTY

- Arjomandi, Kaveh, BScE (IUSt), MScE (SUT), PhD (DAL), PEng, Assoc Prof - 2015
- Bischoff, Peter H., BASc (UBc), MEng (McG.), PhD, DIC (Imperial Col, Univ. of London), FSCE, FACI, PEng, Prof - 1992
- Christie, James s., BScE, MScE, PhD (UNB), PEng, Hon Res Prof - 2014
- Hanson, Trevor, BScE, MScE, PhD (UNB), PEng, Assoc Prof - 2011
- Haralampides, Katy, BA, BSc (Qu), MScEng (Windsor), PhD (New Orleans), PEng, Prof - 2000
- Hildebrand, Eric d., BScE, MScE (UNB), PhD (Wat), PEng, Prof - 1993
- Lei, Zhen, BEng, MSc (Alberta), PhD (Alberta), Asst Prof and OSCO Research Chair in Offsite Construction - 2019
- Lloyd, Alan E. W., Dip Tech (Camosun), BEng (Lakehead), MASc, PhD (Ottawa), PEng, Assoct Prof - 2015
- MacQuarrie, Kerry T.b., BScE (UNB), MSc, PhD (Wat), PEng, Prof - 1990
- Nasir, Othman, BScE, MScE (Mosul), MScE, PhD (Ottawa), PEng, Asst Prof - 2018
- Oh, Won Taek, BASc, MASc, PhD (Pusan), PhD (Ottawa), PEng, Assoc Prof - 2015
- Rankin, Jeff h., BScE, MScE (UNB), PhD (UBC), FCSCE, PEng, Prof and M. Patrick Gillin Chair in Construction Engineering and Management - 2003
- Sanchez, Xiomara A., BASc, MASc (Uniandes), PhD (Waterloo), PEng, Asst Prof and D.C. Campbell Chair for Highway Construction and Pavement Research - 2015
- Singh, Kripa, BE (Birla Inst), ME (Asian Inst), PhD (Regina), PEng, Prof (Joint - Chemical Eng.) - 2000

- Thomas, Michael D.A., BSc, PGCE (Nottingham), PhD (Aston), FACI, FICT, PEng, Prof - 2002
- Waugh, Lloyd, BScE (UNB), MS, Engr, PhD (Stan), FCSCE, FEIC, PEng, Prof - 1984
- Wilson, Bruce, BASc, MASc (Tor.), PhD (McM), PEng, Prof - 2001
- Yevdokimov, Yuri, BSc (Sumy), MA (Academy of Sciences), MSc (Ill), PhD (Manit), Prof (Joint Economics) – 1999

Adjunct Professors

- Hossack, Ashlee, BScE, PhD (UNB), PEng, Adjunct Prof - 2021
- McGuigan, Benjamin, BScE, PhD (UNB), PEng, Adjunct Prof - 2018
- Robak, Anna, BScE, ME (Asian Inst.), PhD (South Australia), PEng, Adjunct Prof - 2019
- Vanapalli, Sai K, BTech, MTech (Kakatiya), PhD (Saskatchewan), PEng, Adjunct Prof - 2018
- Varamini, Sina, MASc (Dal), PhD (Waterloo), PEng, Adjunct Prof - 2021
- Wachowicz, Monica, MSc (Twente), PhD (Edinburgh), Adjunct Prof - 2021

Professor Emeritus

- Valsangkar, Arun J., BE (Marathwada), ME, PhD (IIS Bangalore), FEIC, PEng, Hon Res Prof, Prof Emeritus - 1981

General Information

Civil Engineering deals with the systems and facilities associated with humanity's needs for shelter, work and transportation, which include: bridges, highways, airports, buildings, industrial plants, dams, housing, hydro developments, water supply, sewage and sewage disposal, and marine facilities. Civil Engineers work with other professionals to ensure that civil engineering works do not adversely affect the natural environment. The Civil Engineer can be involved in various stages of a project's life cycle, including planning, design, construction, operation, or maintenance.

Curriculum

 In order to obtain a BScE degree in Civil Engineering, a minimum of 162 credit hours (ch) is required. All courses in the program must be passed with a C or better. The program consists of core courses complemented by a wide range of electives. The program is designed to be completed within eight academic terms; however, the student may arrange for a program that spans a longer time period. Although the program is flexible, care must be taken to avoid difficulties with *Prerequisites* and *Co-requisites* or with time-tabling.

General Prerequisite NOTE

The following courses (or equivalents) are *Prerequisites* for all 3000-level or higher Civil Engineering courses: CE 1023, ENGG 1001, ENGG 1003, ENGG 1015, CS 1003, MATH 1013, and MATH 1503.

Areas of Specialization

Although the Department of Civil Engineering does not have formal options, students can take elective courses in addition to the required core courses in a specific area to develop a personalized program of study. For example, students interested in the environment may take up to four environmental technical electives in Civil Engineering and one Non-Civil Engineering environmental technical elective in addition to the two environmental core courses required in the program.

Core

Through the core of the Civil Engineering undergraduate program, the student is given a firm base in all aspects of Civil Engineering including the following major areas: Structural; Geotechnical; Construction; Materials; Environmental; Hydrotechnical; and Transportation. In addition to Civil Engineering studies, undergraduates are given instruction in the principles of Mechanical and Geomatics Engineering to enable them to deal intelligently with these branches of engineering in their work. Core courses are also provided by the Arts and Science faculties to give the students the necessary background in the Sciences, Mathematics, Humanities and Social Sciences. The core courses required of all Civil Engineering students are shown below.

Core Courses

PHYS 1081 Foundations of Physics for Engineers
CE 1023 Statics for Engineers
CE 2023 Mechanics of Materials
CE 2033 Structural Analysis
CE 2113 Soil Mechanics I
CE 2703 Introduction to Fluid Mechanics
CE 2913 Numerical Problem Solving
CE 2973 Civil Engineering Design I
CE 3053 Reinforced Concrete Design I
CE 3063 Structural Steel Design I
CE 3123 Foundation Engineering I
CE 3201 Transportation Engineering
CE 3403 Environmental Engineering
CE 3513 Materials for Civil Engineers
CE 3603 Construction Engineering
CE 3713 Hydraulics and Hydrology
CE 3963 Engineering Economy

CE 3983 Civil Engineering Design II
CE 4993 Senior Team Design
CHE 2501 General Materials Science
CHE 2506 Material Science Laboratory
CHEM 1982 General Applied Chemistry
CHEM 1987 General Applied Chemistry Laboratory
CS 1003 Programming and Problem Solving for Engineers
ECON 1073 Economics for Engineers
ENGG 1001 Engineering Practice Lecture Series
ENGG 1003 Engineering Technical Communications
ENGG 1015 Introduction to Engineering Design and Problem Solving
ENGG 4013 Law and Ethics for Engineers
ESCI 1001 The Earth: Its Origin, Evolution & Age
ESCI 1026 Geology Lab for Engineers
GGE 1001 Introduction to Geodesy & Geomatics
HIST 3925 Technology and Society
or
SOCI 2534 Technology and Social Change
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
STAT 2593 Probability and Statistics for Engineers

Electives

In addition to the core courses, the Civil Engineering program includes elective courses in four categories, as follows:

Category Electives	Credit Hours
Natural Science Elective	3
Complementary Studies Elective	6
Non-Civil Engineering Technical Electives	0-4
Civil Engineering Technical Electives	Sufficient to bring program total to 162

Technical Electives

The choice of Civil Engineering Technical Electives shall be subject to the approval of the Chair of the Department. Not all Civil Engineering Technical Electives may be available in any academic year.

CE 5003 Structural Dynamics
CE 5043 Structural Engineering
CE 5053 Reinforced Concrete Design II
CE 5063 Structural Steel Design II
CE 5062 Introduction to the Finite Element Method
CE 5073 Structural Masonry Design
CE 5083 Structural Wood Design
CE 5132 Foundation Engineering II
CE 5163 Advanced Soil Mechanics
CE 5203 Transportation Planning
CE 5212 Pavement Design I
CE 5222 Traffic Engineering
CE 5232 Transport Facility Design
CE 5241 Infrastructure Asset Management
CE 5411 Water Supply and Wastewater Removal
CE 5421 Water Quality and Treatment
CE 5432 Wastewater Treatment and Pollution Control
CE 5463 Municipal Solid Waste Management
CE 5503 Concrete Technology
CE 5612 Const: Financial and Industry Issues
CE 5623 Project Management
CE 5633 Construction: Advanced Technologies
CE 5721 Ecohydraulics
CE 5753 Engineering Hydrogeology
CE 5913 Special Studies in Civil Engineering I
CE 5923 Special Studies in Civil Engineering II
CE 5933 Special Studies in Civil Engineering III
CE 5963 Research Thesis

Non-Civil Engineering Technical Electives

Students may take up to 4 credit hours of Technical Electives offered by Departments other than Civil Engineering. A current list of acceptable Non Civil-Engineering Technical Electives is available from the Department of Civil Engineering.

Natural Science Elective

The Civil Engineering program requires 3 credit hours of approved natural science electives such as courses in Biology, Chemistry, Earth Sciences, or Physics. A current list of acceptable Natural Science Electives is available from the Department of Civil Engineering.

Complementary Studies Electives

A complete Civil Engineering program requires 6 credit hours of complementary studies electives. Course selections are subject to departmental approval. At least one of the electives must be a course designated as having a substantial writing component, indicated by a [W] in the calendar description. To meet the Faculty of Engineering General Regulations for Complementary Studies requirements, at least one of the electives must be chosen from one of the following disciplines: Anthropology, Classics, Literature, History, Philosophy, Political Science, and Sociology.

Diploma in Construction

The Department of Civil Engineering offers a Diploma in Construction. Students enrolling in the diploma program will have a wide variety of educational backgrounds, and many will possess considerable experience in the construction industry. Applicants must satisfy certain requirements for admittance to the Diploma program. The program requires a minimum total of 20 credit hours. Further details of required courses and acceptable electives may be obtained from the Department.

ELECTRICAL ENGINEERING

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

General Office:	Head Hall, Room D36
Mailing Address:	Department of Electrical and Computer Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4561
Fax:	(506) 453-3589
Email:	ece@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/ece/

FACULTY

- Biletskiy, Yevgen, MCS, PhD (Kharkiv), PEng, Prof - 2003
- Bubbar, Kush, BSc, Meng (Wat), PhD (UVic), PEng, Asst Prof - 2018
- Castillo-Guerra, Eduardo, BSc, MSc (UCLV), PhD (UNB), PEng, Prof - 2006
- Colpitts, Bruce, BScE, MScE, PhD (UNB), PEng, Prof - 1988
- Diduch, Christopher, BScE, MScE, PhD (UNB), PEng, Prof - 1981
- Englehart, Kevin, BScE, MScE, PhD (UNB), PEng, Prof and Director Inst of Biomedical Eng -1998
- Hosseini, Mahdi S., BSc (Tabriz), MSc (Tehran), MSc (UW), PhD (UofT), Asst Prof - 2020
- Li, Howard, BEE (Zhejiang), MScE (Guelph), PhD (Wat), PEng, Prof - 2007
- MacIsaac, Dawn, BPE (McM), BEd (Qu.), BEng (Mcm), MScE (UNB), PhD (UNB), PEng, Assoc Prof (Joint Computer Science) - 2001
- Meng, Julian, BScE (UNB), MSc, PhD (Qu.), PEng, Prof - 2002
- Petersen, Brent r., BEng (Car), MASc (Wat), PhD (Car), PEng, Assoc Prof - 1997
- Rouse, Chris, BScE, PhD (UNB), PEng, Assist Prof - 2021
- Saleh, Sal, A.M., BSc (Bir Ziet), MSc, PhD (Memorial), P.Eng, Prof - 2011
- Sensinger, Jonathon, B.S. (UIC), MSc, PhD (Northwestern), PEng, Prof and Director of Inst. of Biomedical Eng - 2013
- Scheme, Erik, BScE, MScE, PhD (UNB), P.Eng, Assoc. Prof and Assoc Director of Inst. of Biomedical Eng - 2016
- Shukla, Dhirendra, BEng, MSc (Bradford), MBA (Ottawa), PhD (King's College, UK), PEng, Prof - 2009
- Stevenson, Maryhelen, BEE (Ga Tech), MSEE, PhD (Stan), PEng, Prof - 1990
- Tervo, Richard, BSc, MSc (McM), PhD (Laval), PEng, Prof – 1986
- Wilson, Adam w., BScE, MScE (UNB), PEng, Assoc Teaching Prof - 2017

Professors Emeriti

- Chang, Liuchen, BSc (N. Jiaotong), MSc (China Acad. of Railway Sciences), PhD (Qu.), PEng, Hon Res Prof, Prof Emeritus
- Doraiswami, Rajamani, BEE (VJI, Bombay), MEE (IIS, Bangalore), PhD (Johns H), PEng, Prof Emeritus
- Parker, Philip a., BScE (UNB), MSc (St And), PhD (UNB), PEng, Prof Emeritus
- Taylor, James H., BSEE, MSEE (Rochester), PhD (Yale), Prof Emeritus

Honorary Research Professors

- Hill, Eugene, BScE, MScE (UNB), PhD (NC State), PEng, Hon Res Prof
- Hudgins, Bernard, BScE, MScE, PhD (UNB), PEng, Hon Res Prof
- Kaye, Mary e., BScE (UNb), MEng (Car), PEng, Hon Res Prof

Adjunct Professors

- Calof, Jonathan, BA (Car), MBA, PhD (UWO)
- Coady, Yvonne, BCS (Gonzaga), MSc (SFU), PhD (UBC)
- Drouin, Marc-Antoine, BCS, PhD (Montreal)
- Mao, Meiqin, BSceE, MScEE, PhD (HFUT)

General Information

The Department of Electrical and Computer Engineering is multi-disciplinary, combining disciplines of Electrical, Computer and Software Engineering, the latter being jointly administered with the Faculty of Computer Science. The applications of Electrical and Computer Engineering are highly diversified with emphasis on the use of electrical devices and computers to solve real-world problems. Students in this program can develop expertise in renewable energy, communications, mechatronics, networking, microelectronics, signal processing and computer system design. Engineers graduated from our program experience a competitive advantage for a wide range of jobs in areas associated to industrial control, robotics, aerospace industry, cellular communication, biomedical technology, GPS systems, green power generation, smart vehicles, embedded computing, and computer games among many others. It also supports emerging research that advances technology and fosters scientific discovery.

The Department of Electrical and Computer Engineering is committed to delivering high quality programs that prepares students for successfully entering the workforce to become Professional Engineers or pursuing graduate studies. A foundation is first developed in mathematics, science and engineering. In their final year, students are then introduced to more specialized topics and broaden their knowledge by choosing a number of elective courses in Electrical and Computer Engineering or in such related areas as Mathematics, Physics, Computer Science and other Engineering disciplines. Some elective combinations can be formally recognized on the transcript through completion of an option. The program also makes available courses in cultural subjects that provide an awareness of social and professional perspectives both as individuals and as future engineers. The Department of Electrical and Computer Engineering believes strongly in the value of relevant industrial experience. The Department endorses the Co-op Program and students who wish to gain industrial experience are strongly encouraged to participate in this internship program. Students planning to take Co-op are advised to consult with a program coordinator and/or advisor.

Required Courses

A minimum grade of C is required for all courses used for credit towards the BScE degree. The following is a list of the courses that are core to the program.

Required Courses

APSC 2023 Survey of 19th and 20th Century Physics
APSC 2028 Survey of 19th and 20th Century Physics Lab
CHEM 1982 * General Applied Chemistry
CHEM 1987 * General Applied Chemistry Laboratory
CS 1003 * Programming and Problem Solving for Engineers
CS 1023 Data Structures and Algorithms for Engineers
ECE 1813 * Electricity and Magnetism
ECE 2021 Electrical Design, Experimentation, and Measurements
ECE 2214 Digital Logic Design
ECE 2215 Digital Logic Design Laboratory
ECE 2412 Simulation and Engineering Analysis
ECE 2711 Electric Circuits
ECE 2722 Circuits and Systems
ECE 3031 Electrical and Computer Engineering Design
ECE 3111 Electronics I
ECE 3122 Electronics II
ECE 3221 Computer Organization
ECE 3232 Embedded Systems Design
ECE 3312 Systems and Control
ECE 3511 Signals
ECE 3612 Electric Machines and Design in Sustainable Energy Systems
ECE 3821 Electromagnetics I
ENGG 1001 * Engineering Practice Lecture Series
ENGG 1003 * Engineering Technical Communications
ENGG 1015 * Introduction to Engineering Design & Problem Solving
ENGG 1082 * Mechanics for Engineers
ENGG 4000** Senior Design Project
ENGG 4013 Law and Ethics for Engineers
MATH 1003 * Introduction to Calculus I
MATH 1013 * Introduction to Calculus II
MATH 1503 * Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
MATH 3503 Differential Equations For Engineers
ME 3232 Engineering Economics or CE 3963 Engineering Economy
PHYS 1081* Foundations of Physics for Engineers
STAT 2593 Probability for Statistics
TME 3313 Managing Engineering and Information Technology Projects
* Denotes course in general first year (Engineering I)
** ENGG 4000 prerequisites for electical engineering students: CS 1023 or CS 1083, ECE 3031 and 48 additional credit hours of ECE core courses. Subject to pre-approval by the Department of Electrical and Computer Engineering, students may take TME 4025 if they meet the above ENGG 4000 *Prerequisites*.

Electives

In addition to the core courses there is also a requirement to complete six technical elective courses (minimum of 24 ch), three complementary studies electives (minimum of 9 ch), and one Science Elective (minimum 3 ch).

Basic Science Elective

Each student is required to take one approved 3 ch basic science course chosen from Physics, Chemistry, and the life or earth sciences.

Complementary Studies Elective

The EE program requires 9 credit hours of Complementary Studies electives. The choice of courses is subject to the Faculty of Engineering regulations for Complementary Studies Electives and the following:

a. At least 3 ch must be related to technology and society (examples: HIST 3925 Technology and Society, SOCI 2534 Technology and Social Change).
b. An additional 3 ch must come from Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
c. The remaining 3 ch may be taken from the faculties of Arts (including HSS), Business Administration, Renaissance College or through approval of the program coordinator. No more than 3 ch of language courses may be used for credit toward the BScE degree.

Students are encouraged to seek out courses of interest and value to them. The final choice of electives is subject to the approval of the Department of Electrical and Computer Engineering.
NOTE: University Studies courses (e.g. UNIV 0101) and Academic AESL course (e.g. AESL 1011) will not be counted for credit toward the BScE degree program.

Technical Elective Courses
Each student is required to take six technical elective courses (minimum of 24 ch). At least four of the electives must be ECE courses from the following list (minimum 16 ch).
ECE 4133 Instrumentation Design
ECE 4143 Electronic Circuit Design
ECE 4173 Devices and Circuits for VLSI
ECE 4242 Computer Architecture
ECE 4251 Real Time Systems
ECE 4253 Digital Communications
ECE 4261 Digital System Design
ECE 4273 VLSI System Design
ECE 4323 Modern Control Systems and Applications
ECE 4333 Robotics
ECE 4343 Haptic Robotics
ECE 4403 Software Design Fundamentals
ECE 4433 Safety Critical System Design
ECE 4523 Communication Systems
ECE 4531 Digital Signal Processing I
ECE 4542 Digital Signal Processing II
ECE 4553 Introduction to Pattern Recognition
ECE 4623 Advanced Electrical Machines
ECE 4633 Power System Analysis
ECE 4643 Power Electronics
ECE 4803 Data Communications and Networking
ECE 4813 Electromagnetics II
ECE 4823 Communications Network Engineering
ECE 4833 Microwave Engineering
ECE 4913 Independent Project
ECE 4923 Introduction to Biomedical Engineering
ECE 4943 Topics in Computer Engineering

Students are encouraged to take combinations of electives which will permit some degree of specialization in one or more of the major fields of Electrical and Computer Engineering (see table below). Technical electives may be taken in other disciplines, subject to pre-approval by the Department. For instance, a number of courses in Math, Science, Computer Science and other Engineering disciplines are eligible; of the non-ECE electives, at least one must have second year prerequisites.
NOTE: Not all technical electives are offered every year.

Technical Elective Combinations
The following groupings of elective courses will be of value to students who wish to concentrate in specialized areas of interest.
Control & Instrumentation (Robotics, Mechatronics)
ECE 4133 Instrumentation Design
ECE 4242 Computer Architecture
ECE 4251 Real Time Systems
ECE 4261 Digital Systems Design
ECE 4323 Modern Control Systems and Applications
ECE 4333 Robotics
ECE 4343 Haptic Robotics
ECE 4433 Safety Critical Systems Design
ECE 4531 Digital Signal Processing I
ECE 4803 Data Communcations and Networking
ME 2003 Dynamics for Engineers
ME 4683 Mechatronics
Power & Renewable Energy Systems (Electric, Machines, Power Devices)
ECE 4133 Instrumentation Design
ECE 4433 Safety Critical System Design
ECE 4531 Digital Signal Processing I
ECE 4633 Power Systems Analysis
ECE 4643 Power Electronics
ECE 4623 Advanced Electronic Machines
ECE 4803 Data Communications and Networking
Signal Processing (Filtering, Sensors)

ECE 4133 Instrumentation Design
ECE 4253 Digital Communication
ECE 4523 Communication Systems
ECE 4531 Digital Signal Processing I
ECE 4542 Digital Signal Processing II
ECE 4813 Electromagnetics II
ECE 4833 Microwave Engineering
ME 5653 Predictive Control and Intelligent Sensors
Communications (Wireless, Networking)
ECE 4253 Digital Communications
ECE 4523 Communication Systems
ECE 4531 Digital Signal Processing I
ECE 4803 Data Communications and Networking
ECE 4813 Electromagnetics II
ECE 4823 Communications Network Engineering
ECE 4833 Microwave Enginerring

Biomedical Engineering Option in Electrical Engineering
Biomedical engineering is the application of engineering principles to biological systems. This ECE option explores applications of Electrical Engineering that are ideally suited for biomedical use. The purpose of the option is to give students experience with biomedical terminology and ways of thinking, such that they are familiar with the topics they would need to learn in an advanced degree in order to work with health-care providers, biomedical companies, and solve important problems that pertain to our health and well-being.
Students may not enrol in the option until they have completed 80 ch, although they are encouraged to integrate appropriate coursework (including *Prerequisites*) into their broader plan. Courses chosen to count towards the option must be approved by the option coordinator. Enrolment in this option may result in extra terms; students must ensure coursework schedules.
The biomed option comprises a project-based course in the area of biomedical engineering (described in section A below) along with 20 credit hours from UNB courses described in sections B-C below. Some of these courses taken as part of the option may also be used as technical electives in the EE program.
Students must complete:

A. One of the ECE 4040, TME 4025, ENGG 4000 or ECE 4913 with a biomedical application.
B. One of the APSC 3953 Basis of Biomedical Engineering (3 ch) or ECE 4923 Intro to Biomedical Engineering (4 ch)
C. The remaining credit hours (16 or 17) must be selected from the following courses. An asterisk denotes highly recommended.

BIOL 1711 Human Anatomy I (4 ch)
BIOL 1719 Human Anatomy I - Online (4 ch)
* BIOL 2792 Human Physiology - Systems (3 ch)
BIOL 3033 Cell Signaling (3 ch)
BIOL 4533 Bioinformatics: Computational Analysis of Genes and Genomes (4 ch)
CHEM 4503 Biocomputing in Drug Design (5 ch)
* CS 3025 Human-Computer Interaction (3 ch)
* CS 4725 Introduction to Artificial Intelligence (3 ch)
* ECE 4133 Instrumentation Design (4 ch)
* ECE 4343 Haptic Robotics (4 ch)
ECE 4433 Safety Critical Design (4 ch)
ECE 4531 Digital Signal Processing 1 (4 ch)
ECE 4523 Communication Systems (4 ch)
* ECE 4553 Introduction to Pattern Recognition (4 ch)
* EE 6913 Advanced Biomedical Instrumentation (3 ch)
KIN 2062 Introductory Biomechanics (3 ch)
KIN 2072 Introduction to Motor Control and Learning (3 ch)
KIN 2082 Introductory Exercise Physiology (3 ch)
KIN 2252 Functional Human Anatomy (4 ch)
KIN 3041 Disability Awareness (3 ch)
KIN 3061 Advanced Biomechanics (4 ch)
KIN 3081 Physiological Basis for Physical Activity (3 ch)
KIN 3161 Human Factors in Ergonomic Design (3 ch)
KIN 3282 Physical Activity, Health and Wellness (3 ch)
KIN 4041 Movement Disorders (3 ch)
KIN 4063 Biomedical Instrumentation and Data Acquisition (3 ch)
KIN 4072 Neural Control of Human Movement (3 ch)
KIN 4161 Occupational Biomechanics (3 ch)
KIN 4162 Occupational Health and Safety Ergonomists (3 ch)
KIN 4163 Workplace Ergonomic Design and Analysis (3 ch)
KIN 4281 Measurement and Evaluation in Exercise Science (4 ch)
KIN 4165 Occupational Physiology (3 ch)
* ME 5283 Micro/Nano Manufacturing (3 ch)
* ME 5913 Biomechanics (4 ch)
PHYS 5993 Magnetic Resonance Imaging (3 ch)
* STAT 3773 Elementary Experimental Design (3 ch)

Computer Engineering Option in Electrical Engineering
Computer Engineers use a combination of hardware and software to apply digital systems to solving real-word problems in many applications areas. The Computer Engineering (CMPE) Option allows EE students to

enhance their electrical engineering fundamentals with software design and embedded hardware knowledge.

Students may not enrol in the option until they have completed 80 ch, although they are encouraged to integrate appropriate coursework (including *Prerequisites*) into their broader plan. Courses chosen to count towards the option must be approved by the option coordinator. Enrolment in this option may result in extra terms; students must ensure coursework schedules.

The CMPE option requires a project-based course in the area of Computer Engineering (described in section A below) and 20 credit hours of UNB courses from sections B and C shown below. Some of these courses taken as part of the option may also be used as technical electives in the EE program. The option coordinator may approve other courses.

Section A: One project based course: Either ECE 4040, TME 4025, ENGG 4000 or ECE 4913 with a Computer Engineering Application.

Section B: Select One
CS 2043   Software Engineering I (4 ch)
ECE 4403 Software Design Fundamentals (4 ch)

Section C: Option Specific Courses list (select 16 ch). One course labelled with a P is required.

*Denotes highly recommended
P Denotes a course with a major programming content.
CS 1083 Introduction to Computer Programming II (4 ch)
CS 1103 Introduction to Databases (4 ch)
P CS 2053 Introduction to Game Development (4 ch)
P CS 2063 Introduction to Mobile Application Development (4 ch)
CS 2333 Computability and Formal Languages (4 ch)
*P CS 2383 Data Structures and Algorithms (4 ch)
P CS 3413 Operating Systems I (4 ch)
CS 3543 Database Systems and Administration (3 ch)
CS 3873 Net-Centric Computing (4 ch)
P CS 4405 Operating Systems II (4 ch)
CS 4745 Introduction to Paralell Processing (4 ch)
ECE 4133 Instrumentation Design (4 ch)
* ECE 4242 Computer Architecture (4 ch)
*P ECE 4251 Real Time Systems (4 ch)
ECE 4253 Digital Communications (4 ch)
*ECE 4261 Digital Systems Design (4 ch)
ECE 4273 VLSI Systems Design (4 ch)
ECE 4333 Robotics (4 ch)
ECE 4433 Safety Critical System Design (4 ch)
* ECE 4531 Digital Signal Processing I (4 ch)
ECE 4553 Introduction to Pattern Recognition (4 ch)
ECE 4803 Data Communications and Networking (4 ch)
ECE 4823 Communications Network Engineering (4 ch)
* MATH 2203 or CS 1303 Discrete Mathematics or Discrete Strutures (3 ch or 4 ch)
SWE 4103 Software Quality and Project Management (4 ch)
SWE 4203 Software Evolution and Maintenance (4 ch)
P SWE 4403 Software Architecture and Design (4 ch)

Recommended Program
The program allows completion of degree requirements in eight terms. However, a significant number of students plan to take nine or ten terms to reach graduation, using the extra time to master the material more thoroughly or to take extra courses. Students planning to take longer than eight terms are advised to plan well ahead and to consult with faculty in order to minimize problems arising from timetabling restrictions and prerequisite requirements. The General Regulations of the Faculty of Engineering, including minimum credit hour requirements that are listed under Bachelor of Science in Engineering, apply to the Electrical Engineering program.

Minor in Electrical Engineering
A Minor in Electrical Engineering is offered to students registered in degree programs in the Faculty of Engineering other than Electrical Engineering and comprises 8 courses with a minimum of 24 credit hours of ECE courses which are not core courses for the student's degree. ECE 2214/ECE 2215, ECE 2722, ECE 3111, and one of ECE 3221, ECE 3312, ECE 3511, ECE 3612, or ECE 3821 must be taken for the minor. At least one additional course must be at the third-year level or above. The selection of courses to complete the remaining credit hours must be approved the Department of Electrical and Computer Engineering in conjunction with approval of the required courses described above. ECE courses, including those from the selection above, will not be approved if they overlap substantially in content with non-ECE courses taken in the student's primary degree. The selection may not include ECE 2412 .

GEOLOGICAL ENGINEERING

General Office:	Head Hall, Room H-124

Mailing Address:	Dr. Won Taek Oh, P.Eng Director, Geological Engineering Program Department of Civil Engineering University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 452-6237
Fax:	(506) 453-3568
Email:	GE-Program@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/undergrad/geological/index.html

General Information
Geological Engineers play key roles in the exploration, protection, and responsible development of Earth's water, natural, and energy resources. They also ensure that structures such as bridges, dams and buildings are designed for long term stability and safety, taking geological conditions and hazards into account. The profession is distinct amongst engineering disciplines for the opportunities it affords for travel and work in the natural environment, and for the atmosphere of adventure and discovery that accompanies geological exploration at all scales.

Geological engineers require skills and tools to "see" beneath the surface and predict the behaviour of highly variable earth materials. To this end, they draw on the field methods, powers of observation, analytical techniques, and remote sensing tools employed by geoscientists, and incorporate engineering approaches to materials testing, modelling, structural design and risk assessment. They must integrate a wide variety of data with knowledge of geological and geotechnical processes in order to make informed recommendations and decisions. As team players, frequently working with geologists or civil engineers, geological engineers also require good communication and people skills.

Examples of engineering works with significant geological engineering components include mines, dams, bridges, building foundations, highways, slope stabilization projects, landfill and wastewater treatment sites, waterways and port facilities. Geological engineers also conduct environmental impact assessments, develop and protect groundwater resources, and remediate contaminated sites. In the oil and gas and mining industries, they are responsible for locating and evaluating resources hidden far below the Earth's surface and for developing natural and energy resources efficiently and responsibly.

Program
The Geological Engineering Program is delivered jointly by the Department of Civil Engineering and the Department of Earth Sciences at UNB. The program provides education in the basic sciences and engineering principles required for the profession as well as exposure to important aspects of oral and written communications, engineering design, economics, law, and professional practice. Skills in field work and team work are developed through two geoscientific field schools and through a capstone team design project. Students may tailor their program of study through the choice of technical and complementary studies electives. For example, students interested in the geoenvironmental, geotechnical, or natural and energy resources fields can choose electives to further their understanding of those topics. Graduates of this program will have fulfilled the academic requirements for registration in Canadian associations of professional engineers. With appropriate course selection, graduates of the program may also be eligible to register as professional geoscientists.

The Geological Engineering BScE degree program entails 160 credit hours in classes plus an additional 10 credit hours taken in the form of two field schools that are held in the spring or late summer outside the normal teaching terms. All courses in the program must be passed with a C or better. The program is intended for for completion within eight terms. Students should pay special attention to course sequences and prerequisites when selecting their courses for any term. Some upper year courses are offered in alternate years. Advice concerning course selection and sequencing should be sought from the Director of the Geological Engineering Program.

Core (157 ch)
Through the core of the undergradate program, students are given a firm base in all aspects of Geological Engineering. The core courses required of all Geological Engineering students are shown below:
CE 1023 Statics for Engineers
CE 2023 Mechanics of Materials
CE 2113 Soil Mechanics I
CE 2703 Introduction to Fluid Mechanics
CE 2913 Numerical Problem Solving
CE 2973 Civil Engineering Design I
CE 3123 Foundation Engineering I
CE 3603 Construction Engineering I
CE 3713 Hydraulics & Hydrology
CE 3963 Engineering Economy
CHEM 1982 General Applied Chemistry
CHEM 1987 General Applied Chemistry Lab
CS 1003 Programming and Problem Solving for Engineers

ECON 1073 Economics for Engineers
ENGG 1001 Engineering Practice Lecture Series
ENGG 1003 Engineering Technical Communications
ENGG 1015 Introduction to Engineering Design and Problem Solving
ENGG 4013 Law and Ethics for Engineers
ESCI 1001 The Earth: Its Origin, Evolution and Age
ESCI 2131 Earth and Planetary Materials
ESCI 2142 Mineralogy and Petrology
ESCI 2211 Sedimentology I: Process, Product and Stratigraphy
ESCI 2321 Structural Geology I
ESCI 2602 Principles of Geochemistry
ESCI 2703 Field School
ESCI 3322 Structural Geology II
ESCI 3411 Rock Mechanics
ESCI 3631 Geochemistry of Natrual Waters
ESCI 3703 Field School or ESCI 3713 Geoenvironmental Field School
ESCI 4512 Applied Geophysics II
GE 1026 Geology Lab for Geological Engineers
GE 2022 Engineering Geology
GE 4981 Site Investigation
GE 4993 Senior Team Design
GE 5753 Engineering Hydrogeology
GGE 1001 Introduction to Geodesy & Geomatics
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
PHYS 1081 Foundations of Physics for Engineers
STAT 2593 Probability and Statistics for Engineers

Technical Electives (7 ch)
Suggested technical electives are listed below. Others courses may be acceptable subject to the approval of GE Program Director.
CE 3403 Environmental Engineering
CE 5132 Foundation Engineering II
CE 5163 Advanced Soil Mechanics
CE 5212 Pavement Design I
CE 5421 Water Quality and Treatment
CE 5432 Wastewater Treatment and Pollution Control
CE 5623 Project Management
ESCI 3482 Mineral Resources, Economics and the Environment
ESCI 3492 Petroleum Geoscience, Carbon Cycle and the Environment
ESCI 4412 Applied Rock Mechanics (O)
ESCI 4452 Environmental Impact Assessment
ESCI 4461 Economic Geology I
ESCI 4501 Applied Geophysics I
ESCI 4401 Applied Glacial Geology
GGE 3342 Remote Sensing

Complementary Studies Electives (6 ch)
A complete Geological Engineering program requires 6 credit hours of complementary studies electives. Course selections are subject to Program Director's approval, and also must meet the Faculty of Engineering General Regulations for Complementary Studies requirements. At least one course must be designed as having a substantial writing component, indicated by a [W] in the calendar description. At least one of the electives must be chosen from one of the following disciplines: Anthropology, Classics, Literature, History, Philosophy, Political Science, and Sociology.

GEOMATICS ENGINEERING

General Office:	Head Hall, Room E-54
Mailing Address:	Department of Geodesy & Geomatics Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4698
Email:	gge@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/ gge/index.html

FACULTY
- Church, ian BScE, MScE, PhD (UNB), Assistant Prof - 2016
- Dare, Peter, BSc (East London), MASc (Erindale College), PhD (East London), PEng, FRICS, Prof - 2000
- Jabari, Shabnam, BScE, MScE (Tehran), PhD (UNB), Peng, Assistant Prof
- Kingdon, Robert, BScE, PhD (UNB), PEng, ANBLS (Assoc.), Senior Instructor - 2014
- Langley, Richard B., BSc (Wat), PhD (York) - Prof - 1981
- Santos, Marcelo, BSc, (Rio de Janeiro), MSc (National Observatory), PhD (UNB), PEng, Prof – 2000
- Zhang, Yun, BSc (Wuhan), MSc (East China), PhD (Free University Berlin), PEng, Prof – 2000

Emeritus Professors
- Coleman, David, BScE, MScE (UNB), PhD (Tas), PEng, Prof (1993), Prof Emeritus - 2020
- Faig, Wolfgang, Dipl. Ing. (Stuttgart), MScE (UNB), Dr. Ing (Stuttgart), PEng, Prof (1971), Prof Emeritus – 1999
- Hamilton, Angus, BASc, MASc (Tor), PEng, Prof (1971), Prof Emeritus - 1987
- McLaughlin, John D., BScE, MScE (UNB), PhD (Wis.), PEng, Prof (1972), Prof Emeritus and President Emeritus - 2011
- Nichols, Susan, BSc (Acad), MEng, PhD (UNB), PEng, Prof (1992), Prof Emerita - 2014
- Vaníček, Petr, Geodetic Eng., PhD (Prague), PEng, Prof (1971) - Prof Emeritus - 2001
- Wells, David, BScE (Mt. All), MASc (BrCol), PhD (UNB), PEng, Prof (1980), Prof Emeritus – 1999

Adjunct Professors
- Al-Tahir, Raid, BSc (Bagdhad), MSc (OSU), PhD (OSU), Adjunct Prof - 2012
- Bazanowski, Maciej, MEng (Krakow), MScE (UNB), PhD (Warsaw), Adjunct Prof - 2017
- Hughes Clarke, John, BA (Oxford), MSc (S'ton), PhD (Dalhousie), Adjunct Prof - 2017
- Komjathy, Attila, Dipl. Eng. (Miskolc), PhD (UNB), Adjunct Prof – 2012
- Mishra, Rakesh, BSc (Allahabad), MCA (Abdul Kalam), PhD (UNB), Adjunct Prof - 2021
- McGrath, Heather, BSc (McMaster), MScE (UNB), PhD (UNB), Adjunct Prof - 2020
- Szostak-Chrzanowski, Anna, MSc (Warsaw), MEng (UNB), PhD (Krakow), PEng - Adjunct Prof – 2000

General Information
The Geomatics Engineering program is offered by the Department of Geodesy and Geomatics Engineering. Interesting and challenging professional careers in land or cadastral surveying, engineering surveying, mapping, photogrammetry and geodesy are open to graduates. They can find positions with federal, provincial and municipal government agencies, with the oil, gas and mining industries and with numerous private organizations, such as photogrammetric mapping firms, geological and geophysical exploration companies and consulting engineers, or they can be self-employed as professional engineers or registered land surveyors.

A variant of the concept of cooperative education has been adopted as a requirement of the Geomatics Engineering Program. Cooperative education is based upon the principle that a sound academic program combined with relevant technical experience can provide the most effective professional development during the undergraduate years. With this in mind, undergraduate geomatics students are required to obtain at least six months relevant practical experience and to prepare a technical report, normally based on this experience, prior to graduation. Many geomatics organizations have agreed to participate in this program. The Department will facilitate identification of opportunities for appropriate experience, but students will be responsible for selecting and negotiating suitable placement. Engineering Co-op placements in the Geomatics industry may be counted toward this requirement.

Curriculum
With a minimum of 160 credit hours (ch) in the program, students are required to complete:

a. a core of basic engineering subjects;
b. a minimum of 9 ch of approved technical electives, with at least 6 ch of GGE 5000 level courses.

Credit hours for courses are listed in the course descriptions portion of the calendar.
A minimum grade of C is required for all courses to be used as credit toward the degree.
Students who have previous post-secondary educational efforts are advised to write to the Chair of the Department for information on credits that may be awarded.
Students who wish to academically prepare to become professional land surveyors should follow the Cadastral Surveying Option outlined below. The program has been designed to be completed in 8 terms, with reasonable course loads. Students may proceed at a slower rate, but all requirements must be completed within 8 consecutive years. Detailed program information is available from the Department.

Courses
Descriptions of courses offered by the various Departments are given in the "Fredericton Courses" Section of this Calendar.
Core Courses (all required):
CE 3963 Engineering Economy
CS 1003 Programming and Problem Solving for Engineers
CS 3113 Introduction to Numerical Methods
ECON 1073 Economics for Engineers
ENGG 1001 Engineering Practice Lecture Series
ENGG 1003 Engineering Technical Communication

423

SECTION G: FREDERICTON ACADEMIC PROGRAMS

ENGG 1015 Introduction to Engineering Design and Problem Solving
ENGG 1082 Mechanics For Engineers
ENGG 4013 Law and Ethics for Engineers
ESCI 1001 The Earth: Its Origin, Evolution, and Age*
ESCI 1026 Geology Lab for Engineers*
GGE 1001 Introduction to Geodesy and Geomatics
GGE 2012 Advanced Surveying
GGE 2013 Advanced Surveying Practicum or GGE 2014 Advanced Surveying Practicum (Off-campus)
GGE 2501 Land Administration I
GGE 3022 Survey Design and Analysis
GGE 3023 Survey Design Practicum or GGE 3024 Survey Design Practicum (Off-campus)
GGE 3042 Introduction to Global Navigation Satellite Systems
GGE 3111 Introduction to Adjustment Calculus
GGE 3122 Advanced Adjustment Calculus
GGE 3202 Geodesy I
GGE 3342 Remote Sensing
GGE 3353 Ocean Mapping
GGE 3423 Introduction to Geographic Information Systems
GGE 4211 Geodesy II
GGE 4313 Airborne Mapping Systems
GGE 4423 Advanced Geographic Information Systems
GGE 4513 Survey Law I
GGE 4700 Design Project and Report or ENGG 4000 Senior Design Project
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers
MATH 3543 Differential Geometry for Geomatics Engineers
PHYS 1081 Foundations of Physics for Engineers
PHYS 1062 Introductory Physics II
PHYS 1092 Experiments in Introductory Physics II
STAT 2593 Probability and Statistics for Engineers
TME 3313 Managing Engineering & Information Technology Projects

Technical Electives
GGE 5011 Oceanography, Tides, & Water Levels
GGE 5012 Marine Geology & Geophysics
GGE 5022 Precision Surveying
GGE 5042 Kinematic Positioning
GGE 5083 Hydrographic Field Operations
GGE 5222 Gravity Field in Geomatics
GGE 5242 Global Navigation Satellite Systems for Geodesy
GGE 5311 Advanced Hydrography
GGE 5322 Digital Image Processing
GGE 5341 Advanced Technologies in Remote Sensing
GGE 5401 Geospatial Development
GGE 5402 Geographic Databases
GGE 5403 Web Mapping Geospatial Web Services
GGE 5405 Introduction to Big Data & Data Science
GGE 5410 3D Geographic Information Systems
GGE 5415 Real-Time Mobility Data Analytics
GGE 5522 Survey Law
GGE 5833 Land Use Planning for Geomatics
GGE 5701 Special Studies in Geomatics I
GGE 5702 Special Studies in Geomatics II
GGE 5703 Special Studies in Geomatics III

*Students who have already taken CHEM 1982 and CHEM 1987, or CHEM 1872 and CHEM 1877, may use these in place of ESCI 1001 and ESCI 1026.

Other technical electives may be taken in Engineering, Science, Computer Science, or Forestry, subject to Departmental approval. Students are cautioned that not all technical electives may be offered every year.
In addition to the above list, a minimum of 6 ch of complementary studies electives is also required. These require approval by the Department.

Cadastral Surveying Option within Geomatics Engineering
Students who complete a Bachelor of Geomatics at UNB with GGE 5833, GGE 5022, and GGE 5521 or 5522, will have the following notation placed on their UNB transcripts: "COMPLETED CADASTRAL SURVEYING OPTION". This option has been accredited by the Canadian Board of Examiners for Professional Surveyors.

Diplomas in Geomatics
The Department of Geodesy and Geomatics Engineering offers programs leading to diplomas in the areas of specialization of Cadastral Studies, Engineering and Exploration Surveying, Geodetic Surveying, Land Information Management, and Mapping and Geographic Information Systems (GIS). These programs offer an opportunity for practicing surveyors and other technical professionals to gain a thorough understanding of the theory and principles of specific applications of new technologies and methodologies. Each program area consists of selected courses as regularly offered in the undergraduate program. A total of at least 30 credit hours of specified and elective courses is required in each program. All of the courses in these programs are degree-credit courses.

Those who successfully complete a diploma program and who are subsequently admitted to a degree program may receive credit for them. Students enrolled in a diploma program will be subject to all relevant university undergraduate regulations and to the General Regulations of the Faculty of Engineering.
It is recommended that applicants to the Diploma program have successfully completed a program of technology, of at least two years, which should have included or have been supplemented with courses in calculus, computer science, and probability and statistics at a level equivalent to first-year university. It is important that applicants have a working knowledge of these three subject areas and have at least three years of relevant work experience (at least one of which should be as a party chief or equivalent).

Cadastral Studies
GGE 2501 Land Administration I
GGE 3342 Remote Sensing I
GGE 4513 Survey Law I
GGE 5522 Survey Law II
GGE 5833 Land Use Planning for Geomatics
CE 3963 Engineering Economy
TME 3313 Managing Engineering & Information Technology Projects
Electives: At least 4 credit hours

Engineering and Exploration Surveying
ESCI 4501 Applied Geophysics I
ESCI 4512 Applied Geophysics II
GGE 3022 Survey Design and Analysis
GGE 3111 Introduction to Adjustment Calculus
GGE 3122 Advanced Adjustment Calculus
GGE 5022 Precision Surveying
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers

Geodetic Surveying
GGE 3022 Survey Design and Analysis
GGE 3111 Introduction to Adjustment Calculus
GGE 3122 Advanced Adjustment Calculus
GGE 3202 Geodesy I
GGE 4211 Geodesy II
GGE 5242 Global Navigation Satellite Systems for Geodesy
MATH 1503 Introduction to Linear Algebra
MATH 2513 Multivariable Calculus for Engineers

Land Information Management
GGE 3423 Introduction to Geographic Information Systems
GGE 2501 Land Administration I
GGE 4423 Advanced Geographic Information Systems
TME 3213 Quality Management
OR
TME 3413 Technology, Creativity and Innovation
GGE 5401 Geospatial Development
GGE 5405 Introduction to Big Data and Analytics
Electives: At least 8 credit hours

Mapping and Geographic Information Systems
GGE 3423 Introduction to Geographic Information Systems
GGE 3111 Introduction to Adjustment Calculus
GGE 3342 Remote Sensing
GGE 4313 Photogrammetry
GGE 4423 Advanced Geographic Information Systems
GGE 5410 3D Geographic Information Systems
Electives: at least 6 credit hours

Minor in Geomatics
A Minor in Geomatics is offered to students in programs of study other than Geomatics Engineering and comprises a minimum of 24 credit hours (ch) of GGE courses. Normally a background in Calculus (e.g., MATH 1003, MATH 1013), Statistics (e.g., STAT 2593), Linear Algebra (e.g., MATH 1503, MATH 2513 or MATH 2213), and Computer Science (e.g., CS 1003 or CS 1073) would be a prerequisite to the Minor. GGE 1001 (5 ch) must be taken for the Minor. The remaining minimum of 19 ch may be chosen from other GGE courses with the following collections of courses as recommended areas of concentration. Other combinations of courses may be arranged with approval by the Department prior to starting the Minor.

Land Administration and Information Management: GGE 3423, GGE 2501, GGE 4513, plus at least 7 ch of approved GGE course(s).
Mapping and Geographic Information Systems: GGE 3423, GGE 3342, GGE 4423, GGE 4313.
Hydrography and Oceanography: GGE 3353, GGE 5011, GGE 5012, GGE 5083, GGE 5311.
Positioning: GGE 2012, GGE 2013, GGE 3042, GGE 3202, GGE 4211.

MECHANICAL ENGINEERING

General Office:	Head Hall, Room E-41

Mailing Address:	Department of Mechanical Engineering, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4513
Fax:	(506) 453-5025
Email:	meceng01@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/ mechanical/index.html

FACULTY

- Afzal, Muhammad, BScEng (UAF, Pak), MEng (AIT, Thailand), PhD (Ehime, Japan), PEng, Prof – 2008
- Aranas, Jr. Clodualdo, BScE (Philippines), PhD (McGill), P.Eng., Assistant Prof - 2018
- Carretero, Juan a., BEng (UNAM), MASc, PhD (Victoria), PEng, Prof and Chair - 2002
- Dubay, Rickey, BSc Mech, MSc Mech (UWI), PhD (DalTech), PEng, Prof - 1998
- Garland, Phil, BScE, PhD (UNB), PEng, Associate Prof – 2012
- Gerber, Andrew G., BscE, PhD (UNB), BA (Ambassador), Peng, Prof and Chair - 2000
- Hall, Joseph W., Beng, MASc, PhD (McM), Peng, Prof - 2007
- Jeans, Tiger, BScE (UNb), MScE (Toronto), PhD (UNB), PEng, Associate Prof - 2010
- Losier, Yves g., BScE, MScE, PhD (UNB), PEng, Teaching Professor - 2011
- Lyon, Donald E., BS, MS, PhD (Purdue), PEng, Prof - 1991
- Mohammadi Mohsen, BSc (IUT, Iran), MSc (Sharif, Iran), PhD (Western, Ontario), Assoc Prof – 2015
- Raval, Siddharth, BEng (GTU), MScE (UNB), EIT, Assistant Teaching Professor - 2021
- Saha, Gobinda, BSc (Moscow), MSc (TU Delft), PhD (Dalhousie), PEng, Associate Prof - 2015
- Simoneau, Andy, BEng, MEng, PhD (McM), PEng, Associate Prof - 2009

Adjunct Professors

- Chen, Zengtao, BEng (Nanjing USt), MEng, Dr. Eng. (Harbin IT), PhD (Wat), PEng, Adjunct Prof – 2014
- Kalamkarov, Alexander, BSc, MASc, PhD (Moscow), DSc (Academy of Science, Moscow), P.Eng, Adjunct Prof - 2016

Honorary Research Professors

- Biden, Edmund N., BScE (UNb), DPhil (Oxford), Hon. Research Prof - 1987
- Holloway, Gordon, BSc (UNB), MASc, PhD (Ott), Peng, Hon. Research Prof - 1989

Professors Emeriti

- Bonham, David J., BSc (Qu), MEng, PhD (McM), PEng, Prof. Emeritus – 1974
- Davies, Huw G., BSc, PhD (Imperial), PEng, Prof Emeritus - 1975
- Hussein, Esam M.A., BSc, MSc (Alexandria), PhD (McM), PEng, Honorary Research Prof - 1984, Prof Emeritus - 2015
- Rogers, Robert J., BSc (Calgary), MASc, PhD (Wat), PEng, Prof Emeritus - 1977
- Sousa, Antonio C.M., ME (Lco Marques), MSc, PhD (Manc),Fellow OE (Portugal) Prof Emeritus – 1980

General Information

The Department of Mechanical Engineering provides instruction leading to the degree Bachelor of Science in Engineering (BScE). The program of instruction presents a curriculum suitable to the education of engineers in the art and science of Mechanical Engineering.

The curriculum includes a core of basic Mathematics, Science, Business and Humanities subjects, and is structured around a sequence of essential Mechanical Engineering subjects and design instruction. All this provides for the academic requirements of university graduates qualified to practice Mechanical Engineering professionally; it prepares the student for a career in the profession whether involved in the design, production, or operation of mechanical equipment, industrial or power plant, or the pursuit of post-graduate study.

The central theme behind an education in Mechanical Engineering is the engineered production, transformation, conversion, transmission and control of "mechanical" energy and materials. This may involve any or all aspects of the design, manufacture, fabrication, alteration, installation, selection, specification, testing, maintenance, operation, and control of single components and machines or complete and complex systems. The Department offers some specialization in order to match these extremely broad demands to the interests of its students. In particular there are two program options: Mechatronics and Biomedical Engineering. These Options are described in detail below.

Curriculum

Core Courses

Students should note the specific academic regulations in the section "General Regulations" as outlined earlier under "Engineering". In addition to the core courses required of all Engineering students, additional required courses are provided in the areas of applied mechanics, materials, thermodynamics, heat transfer, fluid mechanics, manufacturing engineering and system dynamics, as well as the application of these courses to engineering design. The program is designed to be completed in eight academic terms, however the student may arrange for a program that spans a longer time period. Typical term-by-term course sequences may be seen on the web site: http://www.me.unb.ca.

The complete requirements for the degree, including the core courses recommended for the first and second terms, are listed below. A list of Technical Electives follows the program outline. All courses must be passed with a grade of C or better.

CHE 2501 General Materials Science
CHE 2506 Materials Science Laboratory
CHEM 1982* General Applied Chemistry
CHEM 1987* General Applied Chemistry Laboratory
CS 1003* Programming and Problem Solving for Engineers
CS 3113 Intro to Numerical Methods (or MATH 3413)
ECE 1813 * Electricity and Magnetism
ECE 2683 Electric Circuits and Machines (for non-electricals)
ECE 2701 Electric Circuits and Electronics (for non-electricals) (or ECE 2711)
ENGG 1001* Engineering Practice Lecture Series
ENGG 1003* Engineering Technical Communications
ENGG 1015* Introduction to Engineering Design and Problem Solving
ENGG 1082* Mechanics for Engineers
ENGG 4000 Senior Design Project (or ME 4860 or TME 4025)
ENGG 4013 Law and Ethics for Engineers
MATH 1003* Introduction to Calculus I
MATH 1013* Introduction to Calculus II
MATH 1503* Introduction to Linear Algebra (or MATH 2213)
MATH 2513 Multivariable Calculus for Engineers
MATH 3503 Differential Equations for Engineers
ME 1312 Computer Aided Design
ME 2003 Dynamics for Engineers
ME 2111 Mechanics of Materials I (or CE 2023)
ME 2122 Mechanics of Materials II
ME 2125 Mechanics of Materials Design Project
ME 2143 Kinematics and Dynamics of Machines
ME 2145 Kinematics and Dynamics Design Project
ME 2352 Design Optimization
ME 2413 Thermodynamics
ME 2415 Thermodynamics Lab
ME 3222 Manufacturing Engineering I
ME 3232 Engineering Economics (or CE 3963)
ME 3341 Machine Design
ME 3345 Machine Design Project
ME 3433 Heat Transfer I (or CHE 3304)
ME 3435 Heat Transfer I Lab
ME 3511 Fluid Mechanics
ME 3515 Fluid Mechanics Lab
ME 3522 Applied Fluid Mechanics
ME 3524 Fluid Systems and Design
ME 3613 System Dynamics
ME 3623 Automatic Controls I
ME 4283 Manufacturing Engineering II
ME 4421 Applied Thermodynamics
ME 4424 Sustainable Energy Systems Design
ME 4613 Mechanical Vibration
ME 4861 Mechanical Health and Safety
PHYS 1081* Physics for Engineers
STAT 2593 Probability and Statistics for Engineers
Total credit hours of core courses: 145 ch
Complementary Studies Electives: 9 ch
Technical Electives (see section below): 9 ch
TOTAL CREDIT HOURS FOR DEGREE: 163 ch
* These are first year courses, most of which are accepted for credit by other engineering programs.

Capstone Design Course. ME 4860, or the multidisciplinary design courses, ENGG 4000 and TME 4025, are restricted to students who have completed at least 110 ch in their program and have successfully completed ME 3341 and ME 3345. It is also recommended that students have successfully completed ME 3524. An additional prerequisite for Mechatronics Option students is successful completion of ME 4673.

General Prerequisite NOTE:

The Department of Mechanical Engineering strictly enforces pre- and *Co-requisites*. Therefore, unless students have special permission from the instructor, all students not having the necessary pre- and *Co-requisites*(s) will be removed from the corresponding ME course after the last day to withdraw date. This policy will be strictly enforced for all ME courses.

Electives

Technical Elective Courses

In addition to the core courses, the students select at least 9 credit hours of Technical Elective courses appropriate to their interests. Courses may be selected, as available, from the following list, or any other approved technical course offered outside the Department. The availability of specific technical electives varies; students should see list of planned offerings on web site: http://www.me.unb.ca. At least 6 ch must be Mechanical Engineering electives. Courses below the 3000 level are not normally considered as suitable technical electives.

ME 4703 Mechanical Engineering Measurements
ME 5113 Advanced Solid Mechanics of Composites
ME 5122 Solid State Phenomena
ME 5143 Robot Kinematics
ME 5173 Advanced Kinematics of Manipulators
ME 5183 Industrial Robotics and Automation
ME 5223 Finite Element Analysis in Engineering
ME 5243 Machining Theory and Practice
ME 5253 Codified Design and Failure Analysis
ME 5283 Micro/Nano Manufacturing
ME 5353 Fracture Mechanics
ME 5493 Internal Combustion Engines
ME 5503 App. of Computational Fluid Dynamics to Ind. Processes
ME 5534 Experimental Methods in Fluid Mechanics
ME 5553 Ocean Wave Energy Conversion
ME 5578 Low Speed Aerodynamics
ME 5588 High Speed Aerodynamics
ME 5622 Human Factors Engineering
ME 5643 Automatic Controls II
ME 5653 Predictive Control and Intelligent Sensors
ME 5673 Acoustics
ME 5713 Nondestructive Testing
ME 5754 Steam and Gas Turbines
ME 5813 Special Topics in Mechanical Engineering
ME 5833 Special Topics in Mechanical Engineering
ME 5913 Biomechanics I
ME 5933 Industrial Ecology
ME 5953 Embedded Flight Control Systems

Complimentary Studies Electives

In addition to the core courses and technical electives, students select three courses for at least 9 credit hours of Complementary Studies Elective courses. One of the courses has to be either HIST 3925 or SOCI 2534 or ICS 2001 for Saint John students or an equivalent with approval from the Department. At least 3 ch must be "humanities". A very wide range of elective courses is available. Students are encouraged to take a sequence of courses in one area rather than just entry-level courses. See the Faculty of Engineering General Regulations for restrictions in the selection of Complementary Studies Electives. A list of suggested Complementary Studies Elective courses, as well as their regulations, is available on the web site: http://www.me.unb.ca.

Mechatronics Option in Mechanical Engineering

Mechatronics is an integrated approach to mechanical, electronic and computer engineering for the design of "smart" products and "intelligent" manufacturing systems. This option permits interested students to increase their understanding of these subjects by a selection of core and elective courses in mechanical and electrical engineering. The option normally begins in second year but may be started later.

In order to enter this option, students must meet the following qualifications:

1. Successful completion of 35 ch of the regular program in Mechanical Engineering.
2. Approval of the Department. Applications to the Mechatronics Option are normally considered in August each year. Application forms are available from the Department.

Core Courses for Mechatronics Option:

Compared to the standard Mechanical Engineering Program, only one technical elective is required (as opposed to two for the standard program). For the Mechatronics option, ECE 2711 (Electric Circuits) is recommended instead of ECE 2701 (Electric Circuits and Electronics for Non-electricals). Also required are: ECE 2214 (Digital Logic Design), ECE 2215 (Digital Logic Design Lab), ECE 3111 (Electronics I), ME 4673 (Introduction to Mechatronics) and ME 4683 (Mechatronics Applications). The work for the senior design project course, ME 4860 (or ENGG 4000 or TME 4025), will provide appropriate experience to suit the option.

Technical Electives for Mechatronics Option:

The normal choice of technical electives is replaced by a directed choice of one elective from the list below.
ECE 3221 Computer Organization (4 ch)
ECE 4323 Industrial Control Systems (4 ch)
ECE 4333 Robotics (4 ch)
ECE 4343 Haptic Robotics (4 ch)
ECE 4923 Introduction to Biomedical Engineering (4 ch)
ME 4703 Mechanical Engineering Measurements (4 ch)
ME 5143 Robot Kinematics (4 ch)
ME 5183 Industrial Robotics and Automation (4 ch)
ME 5643 Automatic Controls II (4 ch)

ME 5653 Predictive Control and Intelligent Sensors (4 ch)
ME 5713 Nondestructive Testing (4 ch)
ME 5953 Embedded Flight Control Systems (4 ch)
Other technical elective courses may be selected with the permission of the Chair of the Department or the Director of Undergraduate Studies.

Biomedical Engineering Option in Mechanical Engineering

The Biomedical Engineering Option program is available to all students in Mechanical Engineering who are approved by the Department. This option will help to prepare students for careers in Biomedical Engineering or Medicine. Students interested in pursuing a career in Medicine should consult with the Assistant Dean in the Faculty of Science about what other courses, such as Biology and Chemistry, would be required in order to apply for admission to a medical school; an appropriate individual study program would then be prepared in consultation with the Director of Undergraduate Studies in the Mechanical Engineering Dept. and the Option Coordinator.

Requirements:
ME 4860, or Engg 4000 or TME 4025, Senior project selected to be a biomedical engineering related project. (8 ch)
Plus at least six credit hours of Mechanical Engineering Electives from the list below:
ME 4703 Mechanical Engineering Measurements (4 ch)
ME 5143 Robot Kinematics (4 ch)
ME 5173 Advanced Kinematics of Manipulators (3 ch)
ME 5223 Finite Element Analysis (3 ch)
ME 5622 Human Factors Engineering (3 ch)
ME 5653/ME6003 - Predictive Control and Intelligent Sensors (4 ch)
ME 5913 Biomechanics I (4 ch)
ME 6003 (Special Topics) Fatigue, Failure, and Fracture of Materials (3 ch
ME 6383 Continuum Mechanics
Plus thirteen additional credit hours which can be from the list above or from the list below:
APSC 3953 Basis of Biomedical Engineering (3 ch)
CS 3025 Human-Computer Interaction (3 ch)
ECE 4343 Haptics (4 ch)
KIN 3041 Disability Awareness (3 ch)
KIN 3061 Advanced Biomechanics (4 ch)
KIN 3161 Human Factors in Ergonomic Design (3 ch)
KIN 4041 Movement Disorders (3 ch)
KIN 4063 Biomedical Instrumentation and Data Acquisitions (3 ch)
KIN 4161 Occupational Biomechanics (3 ch)
KIN 4162 Occupational Health and Safety Ergonomics (3 ch)
KIN 4163 (Workplace Ergonomic Design and Analysis (3 ch)
PHYS 5993 Magnetic Resonance Imaging (3 ch)
STAT 5293 Applied Statistics (3 ch)
Other courses may be substituted with the permission of the Option Coordinator.
Some electives may require additional prerequisite courses to be taken. Students are responsible for ensuring any prerequisite requirements are met.
Not all courses are offered each year.
The Biomedical Engineering Option raises the minimum path for Mechanical Engineering from 163 ch to 173 ch and will typically require at least 9 terms to complete.

DIPLOMA IN TECHNOLOGY MANAGEMENT AND ENTREPRENEURSHIP

FACULTY

General Office	Head Hall, Room H-225
Mailing Address	Dr. J. Herbert Smith Centre University of New Brunswick P.O. Box 4400, Fredericton, N.B. Canada E3B 5A3
Phone:	(506) 453-3540
Fax:	(506) 453-4997
Email:	tme@unb.ca
Website:	http://www.unb.ca/fredericton/engineering/depts/tme

- Bubbar, Kush, BSc (Waterloo), MEng (Waterloo), PhD (Victoria), PEng, Assistant Prof - 2018
- Foord, David, BA (Regina), LLB (Dalhousie), PhD (UNB), Assistant Prof -2017
- Shukla, Dhirendra, BEng, MSc (Bradford), MBA (Ottawa), PhD (King's College, UK), PEng, Prof - 2009

General Information

The Faculty of Engineering offers a program leading to a Diploma in Technology Management and Entrepreneurship, administered by the Dr. J. Herbert Smith/ACOA Chair. The mission of the program is to provide undergraduate and continuing education students opportunities to experience the realities of entrepreneurship and management in technology-based businesses and to develop the knowledge and skills

necessary to be successful in business. The Diploma program consists of three core courses and two electives, totalling 15 credit hours. In selecting courses, students will be advised to develop a curriculum that builds skills in three key areas: business management, entrepreneurship, and financial literacy.

Up to twelve credit hours of required courses for the TME Diploma can be shared as credit towards a degree. Each department shall determine its own maximum allowable concurrent credit hours, which may be less than, but no greater than twelve credit hours. Students who intend to complete the diploma must obtain both department and TME program approval of the courses which will be applied towards the degree and the diploma. Applicants are encouraged to apply to the program as early as their first year of study and begin by taking elective courses. A minimum of 80 credit hours completed, or permission of the TME Program Chair, is required to enrol in TME core courses. Applicants who are not full-time students may still apply for the TME Diploma (or enrol in one or more TME courses). These applicants may be requested to submit the following documents along with their TME Diploma Application:

i.   High School transcript;
ii. transcript from post-secondary institution;
iii. resume/curriculum vitae;
iv. cover letter explaining their reasons for wanting to enrol in the TME Diploma program;
v.   any additional supporting documents.

The TME Diploma is granted to students achieving a grade of C or better in all of three core TME courses and two approved elective courses.

It may be possible to complete some TME courses online through the College of Extended Learning's Open Access Learning Program. Please consult the Dr. J. Herbert Smith Centre for more information.

Core Courses
TME 3013 Entrepreneurial Finance
TME 3113 Business Planning and Strategy in an Entrepreneurial Environment
TME 3213 Quality Management
TME 3313 Managing Engineering and Information Technology Projects
TME 3413 Technological Creativity and Innovation
TME 3423 Technological Risk and Opportunity
Students must complete a minimum of three Core Courses.

Electives
The Dr. J. Herbert Smith Centre has a list of pre-approved electives that relate to the mission of the program. Courses may be chosen to reflect the interests of the student, subject to approval by the Chair. TME program electives offered include:
TME 1001 Introduction to Technology Management and Entrepreneurship
TME 2001 Creativity, Innovation and Value Creation
TME 3346 Marketing of Technological Goods and Services
TME 3386 Special Topics in Technology Management and Entrepreneurship
TME 3396 Special Topics in Technology Management and Entrepreneurship
TME 3913 Experiential Learning - Technology Management and Entrepreneurship
TME 4025 Product Design and Development
TME 5386 Entrepreneurial Resilience
A list of approved electives from other departments and faculties can be found on the Centre's website.
Students must complete two approved electives, or an additional two Core Courses.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

BACHELOR OF SCIENCE IN ENVIRONMENT AND NATURAL RESOURCES

General Office:	I.U.C. - Forestry, Room 101
Mailing Address:	ENR Program Faculty of Forestry and Environmental Management, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4501
Fax:	(506) 453-3538
Email:	forem@unb.ca
Website:	http://www.unb.ca/fredericton/forestry/

NOTE: For Faculty information please see the Bachelor of Science in Forestry program section.

General Information
The Bachelor of Science in Environment and Natural Resources (BScENR) degree gives students degree options in the interdisciplinary fields of environmental studies and natural resources. The degree offers three majors: Environmental Management, Water Resources Management, and Wildlife Conservation.

BScENR graduates will learn to solve environmental and natural resource problems from a holistic, systems perspective. They will have skills required to characterize, analyze, and predict change in natural systems. Incorporating their knowledge of land, water, air, plants, animals, and people, they will be able to develop comprehensive solutions to environmental challenges that respect multiple perspectives and demonstrate appropriate stewardship of natural resources.

The BScENR program is designed to help students to acquire the following skills and abilities:

- Technical Outcomes:
  - Characterize a resource, environment or system
  - Analyze a resource, environment or system
  - Predict change over time in a resource, environment or system
  - Synthesize information into comprehensive solutions
- Professional Outcomes:
  - Information literacy
  - Structured problem solving
  - Computer literacy
  - Communication in a professional manner
  - Respectful social interactions
  - Managing and completing projects independently and as a team

Regulations
Students are strongly advised to read the General University Regulations, Section B of this Calendar to obtain important information not covered in the following:

1. A minimum of 138 (Environmental Management major), 137 (Water Resources major) or 138 (Wildlife Conservation major) credit hours and completion of all core courses are required for the BScENR degree.
2. All entering students of the Faculty of Forestry and Environmental Management are required to attend the orientation program as organized by the Faculty.
3. Students must consult with the Student Services Coordinator, or other designated advisor, to receive advice on course selection. Students who wish to register for more than 22 credit hours in a term must have a GPA of 3.0 or higher in the previous assessment period and obtain permission from the Assistant Dean.
4. Students will take courses in normal sequence; exceptions require a minimum 3.0 GPA average in the preceding assessment period, and permission of the Student Services Coordinator, or other designated advisor, and the instructor of the course. Courses in which a student is deficient must be taken not later than the next academic year, except by special permission of the faculty.
5. Degree requirements must be successfully completed in not more than 16 terms during a period of 8 consecutive calendar years from the date of first registration in the program. Transfer students will have the time limit prorated on the basis of advanced credit granted.
6. A minimum assessment grade point average (GPA) of 2.0 is required at the end of each year. Assessment is in May following the completion of the spring examination period and includes the preceding intersession, Summer School and Spring Extensions.
7. A student who has been required to withdraw from the program for academic reasons once, and who reapplies for admission following the withdrawal period, may be re-admitted to the program. If re-admitted, the student will automatically be on academic probation. Failure to meet the normal academic requirements at the next time of assessment will result in final dismissal from the program. Further applications for re-admission will not be considered.
8. C grade minimum is required for all prerequisite and core courses used for credit towards the BScENR degree.

Curriculum
The core program focuses on a wide range of environmental studies with a blend of courses in basic, biophysical, social, and management sciences. In addition, students select one major from Environmental Management, Water Resources Management, and Wildlife Conservation. Opportunity for students to pursue an education of substantial personal choice is provided by elective courses that can be organized in areas of concentration leading to minors. Students may also elect to follow minors offered by other faculties, or take a general variety of courses of personal interest.

Honours Program
Students intending to take the Honours Program must declare their intent to the Assistant Dean prior to the end of the third year of their program and have a CGPA of at least 3.0. All students in the Honours Program are required to complete ENR 4991 Honours Project.

To graduate in Honours, students must meet certain minimum standards in the course work beyond second year.

1. Maintain a CGPA of at least 3.0
2. Achieve a minimum grade of B- in ENR 4991

Core (Required) Courses
Common Core
Core courses common to all BScENR degrees are listed below. **NOTE** that there may be alternative equivalents for introductory chemistry, geology, English, and statistics courses.

BIOL 1001 Biological Principles, Part I
BIOL 1006 Applications in Biology, Part I
BIOL 1012 Biological Principles, Part II
BIOL 1017 Applications in Biology, Part II
BIOL 2003 Introduction to Ecology
CHEM 1303* Introduction to Environmental Chemistry
CHEM 1006* General Chemistry Laboratory I
ENR 1001 Professional Skills in Forestry and Environmental Management
ENR 1002 Resource Management Issues, Ethics and Communications II
ENR 2004 Social and Cultural Systems
ENR 2021 Natural Resource Management, Institutions, Policy and Governance
ENR 3002 Applied Environmental Management
ENR 4020 Management Practicum
ENR 4973 Environmental Management Field Camp
FOR 1001 Introduction to Forestry
FOR 2006 Management of Natural Systems
FOR 2113 Introduction to Wildlife and Aquatic Ecology
FOR 2505 Forest Soils: Formation and Properties
FOR 2881 GIS with Applications in Forestry and Environmental Management
FOR 4545 Biodiversity and Ecosystem Management
MATH 1823 Calculus for Management Sciences
STAT 2264* Statistics for Biology
*Alternative equivalents for course may be available with approval of the Student Services Coordinator or another designated advisor.

Majors
Courses required for each major in addition to the above listed common core courses are shown below.

Environmental Management Major
POLS 1803 The Politics of Climate Change
ENR 1611 Engineered Systems in Natural Resources
ENVS 2023 Climate Change
ENR 2531 Introduction to Hydrometeorlogy Systems
ENR 3000 Indigenous Issues and Perspectives in Natural Resources Stewardship
ENR 3457 Forest Watershed and Water Quality Management
ENVS 4001 Environmental Impact Assessment and Management
BIOL 4233 Conservation Biology
FOR 2425 Autoecology of Forest Vegetation
FOR 4545 Biodiversity and Ecosystem Management
ENVS 5003 Environmental Management Tools

One of the following two:
ECON 3755 Environmental Economics
ECON 3766 Economics of Climate Change

One of the following two:
FOR 3303 Photo-interpretation, Photogrammetry, and Remote Sensing in Forestry
FOR 5284 LiDAR for Forestry and Environmental Management

Two of the following:
ANTH 3117 Human Systems of Exchange: Nature and Culture
ANTH 4114 Culture and Environment
SOCI 3553 Sociology and the Environment
SOCI 3563 Global Perspectives in Environmental Health
HIST 3355 Nature, Culture and the Canadian Environment
HIST 5342 Environmental History of North America

HIST 5345 Natural Resources, Industrialization and the Environment in Atlantic Canada
HIST 3624 A History of Climate Movement (Online)
POLS 4724 Topics in Environmental History and Politics
PHIL 2206 Environmental Ethics
PHIL 3208 Ecological Ethics (Online)
CCS 3405 Media & Environment (O) (Cross-Listed: MAAC 3405)

Water Resources Management Major
ENVS 2003 Introduction to Environmental Studies
ENVS 2023 Climate Change
ENR 2114 Water Sustainability, Practise and and Technology
ENR 2531 Introduction to Hydrometeorlogical Systems
ENR 3000 Indigenous Issues and Perspectives in Natural Resource Stewardhsip
ENR 3201 Urban Hydrology and Watershed Management
ENR 3457 Forest Watershed and Water Quality Management
BIOL 3943 Hypothesis Testing in Biology
ENVS 4001 Environmental Impact Assessment and Management
ENR 4111 Fisheries and Aquatic Techniques
BIOL 4773 River and Lake Ecosystems
FOR 2425 Autoecology of Forest Vegetation

One of the following two:
ECON 3755 Environmental Economics
ECON 3766 Economics of Climate Change

One of the following two:
FOR 3303 Photo-interpretation, Photogrammetry, and Remote Sensing in Forestry
FOR 5284 LiDAR for Forestry and Environmental Management

Minimum of three courses from elective list A and two from elective List B
Elective List A
ENGL 1103 Clear Writing
PHIL 1101 Critical Thinking
SOCI 1525 Introduction to Indigenous Experience
SOCI 1583 Current Social Issues
POLS 1803 Politics of Climate Change
TME 2001 Creativity, Innovation, and Value Creation
LWSO 2003 Law and Society
PHIL 2203 Ethical Issues in Business
PHIL 3208 Environmental Ethics
SOCI 3553 Socioogy and the Environment
POLS 4724Topics in Environmental History and Politics
Elective List B
ESCI 2211 Sedimentology
CE 2703 Introduction to Fluids
Either of the following two if the other was taken as part of the core
FOR 3303 Photo-interpretation, Photogrammetry, and Remote Sensing in Forestry
FOR 5284 LiDAR for Forestry and Environmental Management
CE 3403 Environmental Engineering
ESCI 3442 Geohydrology
BIOL 3603 Invertebrate Zoology
ENR 3261 Data Analysis for Natural Resources
BIOL 4351 Climate Change and Environmental Responses
BIOL 4741 Fish Biology
FOR 4545 Biodiversity and Ecosystem Management
CE 5421 Water Quality Treatment

Wildlife Conservation Major
Total number of credit hours from required courses (93 ch) and selections from constrained electives (27-34 ch) must equal a minimum of 119 ch, (or 125 ch with Honours Thesis). An additional 21 ch of electives is required. Minimum total credit hours needed to graduate is 138.
Required Courses (93 ch)
In addition to those listed in the core common to all ENR majors, required courses for the Wildlife Conservation Major include the following.
FOR 2425 Autoecology of Forest Vegetation
BIOL 2063 Biological Diversity
BIOL 2068 Lab in Biological Diversity
BIOL 2013 Evolutionary Genetics
BIOL 2018 Lab in Evolutionary Genetics
FOR 3445 Ecology of Populations and Communities
FOR 4545 Biodiversity and Ecosystem Management
BIOL 4191 Wildlife Management
STAT 2264 Intro Statistics for Biology Students
Constrained Electives (ranges from 27-34 ch, depending on courses taken)
1 of either: ENGL 1103 OR ENGL 1144 OR ENGL 1145
Elective List A (for 6-8 credit hours, depending on courses taken)
2 courses from the following:
PHIL 1001 Critical Thinking
BIOL 3943 Hypothesis Testing
Field Course (other than ENR 4973), or comparable directed studies Either must be approved by counselor;
FOR 4425 Conservation Genetics

FOR 4655 Wildlife Techniques
ENR 2531 Hydrometeorology
BIOL 4563 Math Biology
BIOL 3293 Population Genetics
FOR 3303 Photo-Interpretation, Photogrammetry, and Remote Sensing
ENVS 4001 Environmental Impact Assessment
Elective List B (for 5-10 credit hours, depending on courses taken)
2 courses from the following:
BIOL 3703 Vertebrate Zoology
BIOL 3603 Invertebrate Zoology
BIOL 3083 Botany
FOR 4723 Ornithology)
BIOL 4732 Mammalogy
BIOL 4741 Fish or BIOL 4746 Lab Studies in Fish Biology
BIOL 3883 Entomology
BIOL 3673 Parasitology or BIOL 4688 Applied Studies in Parasitology
BIOL 3873 Ethology
Wildlife Certification: Students who take a specific suite of additional courses could apply to the Wildlife Society to become a certified Associate Wildlife Biologist. The additional courses would require an extra term or two. Contact the Faculty representative for details.
Minor Programs
Minors in Environmental Management, Water Resources Management, and Wildlife Conservation are available. No credit hours for courses in a student's major program may be counted towards a minor. Course substitutions may be made from time to time at the discretion of the Student Services Coordinator or designated faculty advisor.
Minor in Environmental Management
A grouping of courses totaling at least 24 credit hours must be taken from within from a program-specific core or required electives. Please see the Student Services Coordinator or designated faculty advisor to verify selection of courses.
Required Courses:
ECON 3755 Environmental Economics
ENR 2004 Social and Cultural Systems
ENR 2021 Natural Resource Mgmt., Institutions, Policy, and Governance
ENVS 4001 Environmental Impact Assessment
Two courses from:
BIOL 2003 Introduction to Ecology
ENVS 2023 Climate Change
FOR 4545 Biodiversity and Ecosystem Management
Optional list:
BIOL 3459 Economic Botany
BIOL 4191 Wildlife Management
BIOL 4233 Conservation Biology
BIOL 4351 Climate Change and Environmental Responses
BIOL 4773 River and Lake Ecosystems
BIOL 4863 Environmental Biology
CE 3403 Introduction to Environmental Engineering
CE 5411 Water Supply and Wastewater Removal
CHE 5313 Energy and the Environment
ENR 2114 Water Sustainability: Practice and Technology
ENR 3111 Estuary and Ocean Ecosystems
ENR 3112 Water Resource Management
ENVS 4002 Stakeholder Approaches to Environmental Problem Solving
ENVS 2003 Environmental Management: People, Policy & Planning
FOR 3313 Digital Image Processing in Remote Sensing
FOR 4625 Integrated Management of Insects and Fungi
ESCI 3442 Geohydrology
ESCI 4452 Environmental Impact Assessment
HIST 5342 Environmental History of North America
HIST 5345 Natural Resources, Indust. and Envir. in Atlantic Canada
PHYS 2902 Environmental Physics
RSS 4123 Recreation and Environment
SOCI 3553 Sociology and Environment
Minor in Water Resource Management
A grouping of courses totaling at least 24 credit hours taken from within a program-specific core or constrained electives, including four courses from the following list:
BIOL 4741 Fish Biology
BIOL 4773 Aquatic Ecology
ENR 3532 Ecohydrology
ENR 3111 Estuary & Ocean Ecosystems
ENR 3112 Water Resources Management
BIOL 3663 Biological Oceanography
ENR 3201 Urban Hydrology and Water Management
FOR 3457 Forest Watershed and Water Quality Management
Minor in Wildlife Conservation
Students must pass a minimum of 24 ch (approx. 8 courses) taken from the following list of courses. A minimum of 6 courses must be selected from the required list. The remaining credit hours (approx. 2 courses) can be selected from courses not already taken from the required list, or from the optional list.
Required list:
BIOL 4233 Conservation Biology

BIOL 2063 Biological Diversity
BIOL 2068 Lab in Biological Diversity
Choose two from:
BIOL 3883 Entomology
BIOL 4723 Ornithology
BIOL 4732 Mammalogy
BIOL 4741 Fish Biology
Choose one from:
BIOL 4191 Wildlife Management
FOR 4665 Wildlife Investigational Techniques
Optional List:
BIOL 2013 Evolutionary Genetics
BIOL 2018 Lab in Evolutionary Genetics
FOR 3445 Population and Communities
BIOL 3083 Botany
BIOL 2003 Introduction to Ecology
BIOL 3541 Plant Ecology
BIOL 3603 Invertebrate Zoology
BIOL 3703 Vertebrate Zoology
BIOL 3873 Ethology
BIOL 4641 Coastal Marine Ecology
BIOL 4746 Advanced Studies in Ichthyology
BIOL 4746 Laboratory Studies in Fish Biology
BIOL 4773 Aquatic Ecology
BIOL 4851 Ecology of Marine Birds
BIOL 4863 Environmental Biology
BIOL 6183 River Habitats and Hydraulics
FOR 2113 Introduction to Forest Wildlife Ecology

FOR 3445 Ecology of Populations and Communities
FOR 4425 Biodiversity and Ecosystem Management
FOR 4625 Integrated Management of Insects and Fungi
ESCI 1001 The earth: Its Origin, Evolution and Age
RRS 4123 Recreation and Environment
Major Program:
A Major or Secondary Major in any of the programs (Environmental Management, Water Resources Management, or Wildlife Conservation) can be arranged between any Faculty at UNB and the Faculty of Forestry and Environmental Management, subject to the conditions given by the home faculty. Consultation and approval of the Program Directors in each faculty are required. Completion of a Major or Secondary Major usually requires between 24 to 48 credit hours of courses.

BACHELOR OF SCIENCE IN FOREST ENGINEERING

NOTE: ADMISSION TO THE BACHELOR OF FOREST ENGINEERING DEGREE PROGRAM AND ALL RELATED MINORS HAS BEEN SUSPENDED EFFECTIVE JUNE 1, 2010. FOR FURTHER

BACHELOR OF SCIENCE IN FORESTRY

The Faculty of Forestry and Environmental Management offers the degrees of Bachelor of Science in Forestry.
Faculty of Forestry & Environmental Management

General Office:	I.U.C. - Forestry, Room 101
Mailing Address:	Faculty of Forestry and Environmental Management, University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4501
Fax:	(506) 453-3538
Email:	forem@unb.ca
Website:	http://www.unb.ca/fredericton/forestry/

FACULTY

Acting Dean: Michelle Gray, BSc, MSc, PhD
Assistant Dean: Jae Ogilvie, MSc

- Arp, Paul A., BSc (Car), PhD (McGill), Prof - 1978
- Beckley, Thomas, AB (Boudoin), MS, PhD (Wisconsin-Madison), Prof - 2000
- Blackadar, Janet, BSc, MScF (UNB), Assistant Teaching Prof - 2021
- Bourque, Charles, BSc (Dal), BSc (Alta), MScF, PhD (UNB), Prof - 1994
- Cameron, Stewart, BSc (Mount Allison), MScF (SUNY College of Forestry at Syracuse), PhD (Griffith Univ), Adjunct Prof - 2010
- Constanza, Kara, BA (NY), MS (Maine), PhD (Maine), Instructor - 2017, Adjunct Prof - 2018
- Curry, Allen, BES (Wat), MSc (Trent), PhD (Guelph), Prof, Canadian Rivers Institute, (Joint Biology) – 1997
- D'Orangeville, Loic, BSc (Montreal), MSc (Montreal), PhD (McGill), Associate Professor – 2018
- Diamond, Antony W., BA (Cantab), MSc, PhD (Aberd.), Prof, Atlantic Laboratory for Avian Research, (Joint Biology) Professor Emeritus - 1994
- Ducey, Mark, BA (Yale College), MFS (Yale School of Forestry and Env. Studies), PhD (Yale), Adjunct Prof - 2019
- Forbes, Graham, BA (York), MA, PhD (Wat), Prof, (Joint Science) - 1994
- Golding, Jason, BScBiol(Dalhousie), MScFE(UNB), BScF (UNB), Teaching Associate - 2005
- Gong, Meng, BScE, MScE (Nanjing, China), PhD (UNB), Associate Professor - 2007
- Gray, Michelle, BSc (Trent), MSc (Trent), PhD (UNB), Associate Professor, Director, Canadian Rivers Institute – 2015
- Hanson, Alan, BSc (Mount Allison), MSc, PhD (Western), Adjunct Prof - 2021
- Jaeger, Dirk, MSc, PhD (Gottingen), Adjunct Prof - 2014
- Kershaw, John A., BS, MS (Purdue), PhD (Wash), Prof - 1991
- Lantz, Van, BA (Car.), MA (Dal), PhD (S.Fraser), Prof (Joint Economics) - 2000
- Leblon, Brigitte, Dip Agricultural Eng (Universite Catholique de Louvain), PhD (Ecole Nationale Superieure d'Agronomie), Prof - 1994
- Li, Ling, BSc, PhD (Nanjing), PhD (UNB), Adjunct Prof - 2021
- Linnansari, Tommi, BSc, MSc (Helsenki), PhD (UNB), Prof (Joint Biology) - 2017
- MacLean, David, BSc, PhD (UNB), Professor Emeritus - 1999
- Meng, Fan-Rui, BS, MS (Northeast Forestry Univ.), PhD (UNB), Prof - 1995
- Monk, Wendy, BSc (Loughborough), PhD (Loughborough), Visiting Research Prof, Adjunct Prof
- Nocera, Joseph, BSc (Connecticut), MSc (Acadia), PhD (UNB), Associate Professor – 2016
- Ogilvie, Jae, MScF (UNB), Associate Teaching Professor - 2021
- Percy, Kevin, BScF, MSc (UNB), PhD (Bristol, UK), Adjunct Prof - 2019
- Powell, Graham R., BSc (Edin), MSc (UNB), PhD (Edin), Prof Emeritus - 1996
- Rajora, Om. BSc, MSc, LLB (India), PhD (Tor), Prof – 2004
- Skinner, Marc, BSc (Cape Breton), MSc, PhD (UNB), Adjunct Prof - 2021
- Smith, Ian, BSc (Sund Polyt), MSc (Durh), PhD, (Polyt S Bank), DSc (S Bank), PEng, Professor Emeritus - 1986
- Smith, Ronald, BScF (UNB), MSc (Wisconsin), PhD (Maine), Adjunct Prof - 2018

INFORMATION PLEASE CONTACT THE DEAN OF FORESTRY AND ENVIRONMENTAL MANAGEMENT.

- St-Hilaire, Andre, BSc (Royal Military), MASc (Moncton), PhD (Quebec), Adjunct Prof - 2021
- Sweeney, Jonathan D, BSc (S.Fraser), PhD (UNB), Adjunct Prof 1999
- Taylor, Anthony, BSc (Memorial), MSc (Lakehead), PhD (Lakehead), Associate Prof - 2017
- Thompson, Ian, BSc, MSc (York), PhD (Queens), Adjunct Prof – 2021
- Withey, Patrick, BA (Concordia), MA (Memorial), PhD (Victoria), Adjunct Prof – 2021
- Wyatt, Stephen, BScF (Australia), MSc, PhD (Laval), Adjunct Prof - 2021

General Information

Forests are a source of environmental, economic and social values for all of society. Continued maintenance of these values requires knowledge of natural dynamics at the scale of landscapes, and design skills that extend to large land areas over very long time horizons. The BScF program prepares professionals to work in complex situations where the goals of management must be determined by present society, and the actions to reach these goals must be designed for implementation over time horizons of centuries, in order that future societies will have continued enjoyment of values from forest landscapes. Graduates have the necessary skills to:

a. interact with society to define goals for the forest environment;
b. take a leadership role in the design and implementation of plans to ensure achievement of those goals;
c. help resolve social conflicts associated with issues of environmental and forested landscape management; and
d. assess changes in forested landscapes over time and present this information for public evaluation of progress and review of goals.

Regulations

Students are strongly advised to read the General University Regulations, Section B of this Calendar, for information not covered in the following:

1. A minimum of 137 credit hours is required for the BScF degree.
2. All entering students of the Faculty of Forestry and Environmental management are required to attend the orientation program organized by the Faculty.
3. Students must consult with the Student Services Coordinator to receive advice on course selection. Students may only register for 22 or more credit hours in a semester if they have a GPA of 3.0 or higher in the previous assessment period and have obtained permission from the Assistant Dean.
4. FOR 1001, FOR 2006, FOR 3006, FOR 4096, and FOR 4020 cover subject matter that is delivered in increasing degree of complexity; these courses must be taken in sequence.
5. Degree requirements must be successfully completed in not more than 16 terms during a period of 8 consecutive calendar years from the date of first registration in the program.
6. A minimum assessment grade point average (GPA) of 2.0 is required at the end of each year. Refer to the University Regulations section of this calendar, for regulations regarding the Calculation of Grade Point Averages, and standing and promotion requirements.
7. A student who has been required to withdraw from the program for academic reasons once, and who reapplies for admission following the withdrawal period, may be re-admitted to the program. If re-admitted, the student will automatically be on academic probation. Failure to meet the normal academic requirements at the next time of assessment will result in final dismissal from the program. Further applications for re-admission will not be considered.
8. C grade minimum is required for all prerequisite and core courses used for credit towards the BScF degree.

Honours Program

Students intending to take the Honours Program must declare their intent to the Assistant Dean prior to the end of the third year of their program and have a CGPA of at least 3.0. All students in the Honours Program are required to complete FOR 4991 Honours Research Project.
To graduate in Honours, students must meet certain minimum standards in the course work beyond second year.

1. Maintain a CGPA of at least 3.0
2. Achieve a minimum grade of B- in FOR 4991

Curriculum

The core program focuses on forest ecosystem management with a blend of courses in basic, biophysical, social, and management sciences. Opportunity for students to pursue an education of substantial personal choice is provided by elective courses that can be organized in areas of concentration leading to minors. Students may also elect to follow minors offered by other faculties, or they may take a general variety of courses

that does not lead to a minor. Twenty-four credit hours are required for a minor in the BScF program.

Core courses are listed below. Students are advised to incorporate electives to balance work loads to a normal load of five or six courses per term.

Observations and experimentation in a forested environment are critical to the education of professional foresters so work in natural settings is an important part of many courses. Extensive use is made of University forests which total 3,000 hectares in area, including the UNB Forest, in close proximity to the Fredericton campus. To work in these and other areas, students are advised that they will need an approved hard hat (approximate cost $10.00) and approved safety-toed work boots (approximate cost $100.00).

Students will be required to pay for a portion of costs of extended field trips.

The Canadian Forest Service and the headquarters of the New Brunswick Department of Natural Resources and Energy Development are also nearby to campus. Scientists and managers at these institutions commonly undertake collaborative projects with students which provide opportunities for students to learn from the experience of others beyond their professors.

Core Course Requirements
BIOL 1001 Biological Principles, Part I
BIOL 1006 Applications in Biology, Part I
BIOL 1012 Biological Principles, Part II
BIOL 1017 Applications in Biology, Part II
CHEM 1303 Introduction to Environmental Chemistry
CHEM 1006* General Chemistry Laboratory I
ENR 1001 Professional Skills in Forestry and Environmental Management
ENR 1002 Resource Management Issues, Ethics and Communications
ENR 2004 Social and Cultural Systems
ENR 2531 Introduction to Hydrometerology Systems
FOR 1001 Introduction to Forestry
FOR 2006 Management of Natural Systems
FOR 2113 Introduction to Wildlife and Aquatic Ecology
FOR 2281 GIS with Applications in Forestry and Environmental Management
FOR 2416 Structure and Development of Woody Plants
FOR 2425 Autecology of Forest Vegetation
FOR 2432 Forest Inventory and Growth
FOR 2435 Fundamentals of Forest Tree Physiology and Genetics
FOR 2505 Forest Soils: Formation and Properties
FOR 2703 Forest Operations
FOR 2803 Wood Technology
FOR 3000 Business Management and Human Factors in the Forestry and Environmental Sectors
FOR 3005 Silviculture and Stand Intervention Design
FOR 3006 Forest Management
FOR 3101 Forest Economics
FOR 3303 Photo-interpretation, Photogrammetry, and Remote Sensing in Forestry OR FOR 5284 LiDAR in Forestry and Environmental Management
FOR 3445 Ecology of Populations and Communities
FOR 3456 Forest Watershed and Forest Fire Management
FOR 4020 Management Practicum
FOR 4096 Forest Landscape Design and Management
FOR 4545 Biodiversity and Ecosystem Management
FOR 4625 Integrated Management of Insects and Fungi
FOR 4973 Forestry Field Camp
MATH 1823 Calculus for Management Science
STAT 2264* Intro Statistics for Biology Students
*Alternative equivalents for course may be available with approval of the Student Services Coordinator or designated advisor.

Urban Forestry Major
The Urban Forestry Major is a 2+2 BScF degree program offered in conjunction with Sir Sanford Fleming College (SSFC) in Lindsay, Ontario. Students who have successfully completed the Urban Forestry Technician Program at SSFC (with a 70% or higher average grade) will be eligible to enroll in a BScF Urban Forestry Major at UNB.

Urban forestry is a specialized branch of forestry focused on the care, protection and maintenance of trees, forests, and green spaces in and around populated areas. Urban forestry emphasises the social, public, health and environmental links and interactions associated with urban and community spaces. The objective of the Urban Forestry Major is to educate professionals so they are well-equipped to interact with the public, and to design, evaluate, and implement management of forests and green spaces in urban environments.

After attaining an Urban Forestry Technician diploma at SSFC, students with a satisfactory standing must complete 82 credits at UNB. The required courses are:
BIOL 1001; BIOL 1006 Biological Principles I + Lab
FOR 1001 Introduction to Forestry
FOR 2006 Management of Natural Systems
FOR 2505 Forest Soils: Formation and Properties

FOR 3101 Forest Economics
BIOL 1012; BIOL 1017 Biological Principles
MATH 1823 Calculus for Management Sciences
FOR 3006 Forest Management
ENR 3201 Urban Watershed Management
ENR 4785 Urban Forest Conservation and Management
FOR 2281 GIS with Applications in Forestry and Environmental Management
FOR 3005 Silviculture and Stand Intervention Design
FOR 3445 Ecology of Populations and Communities
FOR 4020 Forest Management Practicum
FOR 4545 Biodiversity and Ecosystem Management
FOR 4973 Forest Field Camp
FOR 2703 Forest Operations
FOR 2803 Wood Technology
FOR 4721 Urban Land Use Policy, Planning and Procedures
2 electives

Minors
Forest Environment Minor: The Forest Environment Minor is a formal way to receive recognition for completing a concentrated, introductory study on forestry issues, forest measurements, forest ecology, social values and policy, and forest management. It is available to students in all degree programs excepting BScF. It prepares students for an awareness of the multiple values that forests provide to society, as well as the processes that conserve and sustain the use of forests for habitat and biological diversity. The Minor requires 24 credit hours (approximately 8 courses) of approved courses as listed below. Credit hours of core courses in the student's major may not be counted towards the credit hour requirement of this minor. Substitutions may be made at the discretion of the faculty advisor.
Required:
FOR 1001 Introduction to Forestry
FOR 2006 Management of Natural Systems
Choose one of the following two:
ENR 2004 Social and Cultural Systems
ENVS 4002 Stakeholder Approaches to Environmental Problem Solving
Choose one of:
FOR 2425 Autecology of Forest Vegetation
FOR 4545 Biodiversity and Ecosystem Management
The remaining credit hours may be selected from the following list. Additional courses may be added to this list at the discretion of Faculty Advisor.
FOR 2113 Introduction to Wildlife and Aquatic Ecology
FOR 2425 Autecology of Forest Vegetation
FOR 2432 Forest Inventory and Growth
FOR 2505 Forest Soils: Formation and Properties
FOR 2281 GIS with Applications in Forestry & Environmental Management
FOR 3005 Silviculture and Stand Intervention Design
FOR 2703 Forest Operations
FOR 3006 Forest Management
FOR 3101 Forest Economics
FOR 3445 Ecology of Populations and Communities
FOR 3456 Forest Watershed and Forest Fire Management
FOR 4425 Conservation Genetics
FOR 4545 Biodiversity and Ecosystem Management
FOR 4625 Integrated Management of Insects and Fungi
Computer Applications Minor: This minor develops a working level of computer literacy in data handling for geographic information systems and remote sensing as applied to forest inventory and management design.
Required courses:
One of the following four:
CS 1073 Intro to Computer Programming I (in Java)
CS 1003 Programming and Problem-Solving for Engineers
FOR 3313 Digital Image Processing in Remote Sensing
In addition, students must choose 3 credit hours from among -
CS 1083 Intro to Computer Programming II (in Java)
CS 2685 C++ Programming for Programmers
CS 2043 Software Engineering I
CS 3043 Software Engineering II
CS 3703 Multimedia Design
FOR 4303 Optical, Thermal Infrared and Radar Remote Sensing
FOR 4304 Image Processing Methods for Radarsat-2 and Polarimetric Images
GGE 3423 Introduction to Geographic Information Systems
GGE 2413 Mapping Concepts and Techniques
Wildlife Conservation Minor: The Wildlife Conservation Minor is a formal way to receive recognition for focusing your education on wildlife species, their biological characteristics, management, and current environmental issues; all these areas are of increasing importance to the ways society progresses. Requirements for the Wildlife Conservation Minor are listed under the Environment and Natural Resources Program.

Wildlife Certification: Students who take a specific suite of additional courses could apply to the Wildlife Society to become a certified Associate Wildlife Biologist. The additional courses would require an extra term or two. Contact the Faculty representative for details.

Forest Science Minor: The Forest Science Minor provides students the opportunity to complement their forest ecosystem management core program with courses in the general field of forest-related science. Two courses are required. Students may then select a stream of related courses or a more varied range of courses that will give insight into more than one area. Examples of areas include ecology, biodiversity, biotechnology, or the biophysical environment. Students are advised to consult their advisor for guidance in course selection.

The required courses to be taken in years 2 or 3 are:

BIOL 2013 Evolutionary Genetics
FOR 2345 Meteorology and Hydrology

A minimum of 17 credit hours of courses are to be selected from the following list, or approved alternatives (courses offered by the Faculties of Engineering, Forestry or Science). At least three courses are to be at the 3000 level or higher.

BIOL 1846 New Brunswick Plants and their Habitats
BIOL 3301 Taxonomy of the Flowering Plants
BIOL 3459 Economic Botany
BIOL 4423 Conservation Genetics
FOR 3425 Forest Tree Genetics and Genomics
FOR 4723 Ornithology
FOR 4911 Directed Studies in Forestry

BACHELOR OF SCIENCE IN KINESIOLOGY

Faculty of Kinesiology

General Office:	Kinesiology Building
Mailing Address:	Faculty of Kinesiology University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4575
Fax:	(506) 453-3511
Email:	kin@unb.ca
Website:	http://www.unb.ca/fredericton/kinesiology/

FACULTY
Dean: Wayne Albert, BSc, MA, PhD
Assistant Dean (Undergraduate Programs): Charlene Shannon-McCallum, BBA, B or Recr Mgmt, MA, PhD
Assistant Dean (Graduate Programs and Research): Jonathon Edwards, BSM, MA, PhD

- Albert, Wayne, BSc (Ottawa), MA (UWO), PhD (Qu), Prof and Dean - 1999
- Barclay, Katherine, BSc (UNB), MSc (Waterloo), PhD (Guelph), Teaching Prof (Joint Biology, Nursing) - 2001
- Bouchard, Danielle, BPE (Sherbrooke), MSc (Quebec), PhD (UdeM), Assoc Prof - 2015
- Byers, Terri, BPE (Acadia), MA, PhD (DeMontfort), Assoc Prof - 2014
- Chester, Victoria, BScHK (Guelph), MA (Laur), PhD (UNB), Prof - 2002
- Dombrowski, Stephan, BA (Essex), MSc (Sussex), PhD, CPsychol (Aberdeen), Assoc Prof - 2018
- Duquette, Greg, BKin (McM), MA (CMU), Teaching Prof – 2008
- Edwards, Jonathon, BSM (Brock), MA, PhD (Alberta), Assoc Prof - 2012
- Hebert, Jeffrey, BA (Denver), DC (Palmer College of Chiropractic), PhD (Utah), Prof and Chiropractic Chair - 2017
- Kuruganti, Usha, BSceE, MScEE, PhD (UNB), Prof - 2004
- Mason, Fred, BA, BPE (MUN), MA (Ottawa), PhD (UWO), Assoc Prof - 2006
- McGarry, Timothy, BSc (Liv), MSc (Brad), MPE, PhD (UBC) Assoc Prof - 2000
- McGibbon, Chris, BSc, MSc, PhD (UNB), Prof - 2004
- McKenna, Mary, BSc (McG), MSc (Cornell), PhD (Nottingham), Prof - 1993
- Noble, Jeremy, BSc, MSc, PhD (Waterloo), Assoc Teaching Prof - 2014
- Oncescu, Jacquelyn, BRM, MR (Acadia), PhD (Ottawa), Assoc Prof - 2018
- Scott, David, BA, PGCE (Ulster), MA, MA, PhD (Vic B.C.), Assoc Prof - 1997
- Seaman, Kenneth, BSc (Dal), MSc, PhD (UNB) - Teaching Prof - 2011
- Sénéchal, Martin, BSc, MSc, PhD (Sherbrooke), Assoc Prof - 2015
- Shannon-McCallum, Charlene, BBA, B of Recr Mgmt (Acadia), MA, PhD (Waterloo), Prof - 2002
- Tymowski-Gionet, Gabriela, BA, BEd, MA (UWO), PhD (Gloucestershire), Assoc Prof - 1999

General Information
The Faculty of Kinesiology offers two undergraduate degree programs: Bachelor of Science in Kinesiology and a Bachelor of Recreation and Sport Studies. **The Bachelor of Science in Kinesiology (BScKin)** is a four-year discipline based program of study, with the focus being on applying scientific principles to the study of human movement. The program will prepare students for career opportunities in applied exercise, sport science, and health related professions (e.g. fitness consulting, athletic therapy, ergonomics, human factors) and related careers, as well as for further study in the exercise and sport science disciplines or allied health professions (nutrition, occupational therapy, physiotherapy, medicine). Students interested in becoming elementary or secondary physical education teachers and coaches in school systems can select either the BRSS or the BScKin degree program. Students who are interested in the Arts and Humanities as a teachable subject, should select the BRSS degree program, while students who are interested in the Sciences as a teachable subject, should select the BScKin degree program.
High School applicants or first-year students interested in the BEd program at UNB should refer to the Faculty of Education Admission Advantage program in either the Admissions section of this calendar (Item J) or the Bachelor of Education section under Fredericton Degree Programs.

University Regulations
Any point not covered in the following regulations will be governed by the General University Regulations as stated in this Calendar. Questions concerning the application of regulations should be directed to the Registrar in writing.

Conditions Regarding Admission to the BSckin Program
All admissions are on a competitive basis; satisfaction of minimum requirements does not guarantee admission. Normally, no more than 100 students will be admitted to first year in the Faculty of Kinesiology in any academic year.

Transfer Students
1. Normally, a minimum session grade point average of 3.0 is required for a student to be considered for transfer into one of the Faculty's programs.
2. Normally, a student will not be allowed to transfer into the Faculty mid-way through the academic year.
3. In addition to scholastic record, a transfer applicant's record of participation and interest in the "Kinesiology," "Recreation," and "Sport Science" field is also considered for admission.
4. Students presently registered in the Faculty will continue to be governed by the regulations in effect when they first registered. Students who were formerly in the Faculty and apply for re-admission, if accepted, will be governed by the regulations in effect at the time of their re-admission.

Time Limitation
The maximum time period permitted between the first registration in the BScKin degree program and the completion of the BScKin degree shall normally be eight (8) years. Normally, BScKin students who are re-admitted within this time frame must complete the degree requirements in effect at the last re-admission.

BScKin as a Second Degree
In addition to the University's regulations for a second undergraduate bachelor's degree as specified in the UNB Undergraduate Calendar, the Faculty of Kinesiology requires that any student accepted into the BScKin degree program as a second undergraduate bachelor's degree be required to: (a) Complete at least thirty (30) credit hours of courses, and (b) Complete the requirements of the BScKin program.

General Regulations
Grade Point Averages
1. The method of calculating grade point averages is explained in the Calculation of Grade Point Average, section H, of this calendar.
2. To earn a BScKin degree, a student must have successfully completed a minimum of 131 ch of approved courses.
3. Students should refer to the Standing and Promotion Requirements, section I, of this Calendar for regulations regarding academic probation and withdrawal.

Policy on Grades
BScKin students must obtain a grade of "C" or better in all required core courses. These courses include:

a. all first year required courses
b. all required core courses

NOTE: KIN1001 is considered to be *Prerequisites* or *Co-requisites* to all other KIN and RSS courses. Students receiving a final grade of "D" in KIN1001 may repeat KIN1001 as a *Co-requisites* to other second year KIN and RSS courses.

Repeating Courses
1. Regulations pertaining to repeating courses can be found in the Repeating Courses section of this Calendar.
2. Any required courses not successfully completed during a given year must be attempted not later than the next academic year, except by special permission of their academic advisor.

Summer Term Courses
BScKin students who wish to take Summer Term courses that are to be credited towards their degree should first consult with their Academic Advisor.

Practica and Directed Studies
1. Normally, students may elect a maximum of six (6) ch from practicum courses, i.e., KIN 3911 (1), KIN 3912 (2), KIN 3913 (3), KIN 3914 (3) KIN 4910 (6).
2. Normally, students may elect a maximum of six (6) ch from directed study courses, i.e., KIN 4903 (3), KIN 4904 (3), KIN 4800 (6).

Approval of Elective Courses
Advice concerning elective courses will be provided by members of the Faculty. All elective courses require approval of the Faculty.

Normal Workload
The maximum student workload is considered to be 22 ch per term, or 40-44 ch per year (not including Summer Term). Permission from their academic advisor is required to exceed 22 ch per term or 44 ch in any given academic year.

BScKin Year Designation Based on Credit Hours
For the purposes of on-line registration and administrative operations, BScKin students shall be considered as in:

1. Second year after the student has successfully completed 30 ch toward their BScKin
2. Third year after the student has successfully completed 60 ch toward their BScKin
3. Fourth year after the student has successfully completed 90 ch towards their BScKin

Curriculum
General NOTES

1. **It is the student's responsibility to complete the degree program curriculum for the year in which they enrol.**
2. In the BScKin degree program, activity lab courses are not required but may be taken as General KIN/RSS Electives up to a maximum of 6 credit hours.
3. The minimum credit hour total to graduate with a BScKin degree is 131.

Year I: (37 ch)
Required Core
KIN 1001 Introduction to Kinesiology 4 ch
One of the following three courses: 3 ch

- RSS 1042 History of Sport and Recreation 3 ch
- RSS 1081 Health and Wellness 3 ch
- KIN 2093 Introduction to Philosophy of Kinesiology 3 ch

KIN 1160 Laboratory Methods in Kinesiology 4 ch
KIN 2032 Introduction to Sport and Leisure Psychology 3 ch
BIOL 1001 Biological Principles, Part I 3 ch
BIOL 1711 Human Anatomy I 4 ch
BIOL 1782 Human Physiology I 4 ch
MATH 1003 Introduction to Calculus I 3 ch
MATH 1503 Linear Algebra 3 ch
Choose 3 ch from the following:
ANTH, ARCH, ECON, PHIL, POLS, PSYC, SOCI
One of ENGL 1103/1144/1145 3 ch
Year 2 (33 ch)
Required Core
BIOL 2721 Human Physiology II 4 ch
RSS 2023 Sociology of Sport, Physical Activity & Leisure 3 ch
KIN 2062 Introductory Biomechanics 3 ch
KIN 2072 Introduction to Motor Control and Learning 3 ch
KIN 2082 Introductory Exercise Physiology 3 ch
KIN 2252 Functional Human Anatomy 3 ch
STAT 2263 or STAT 2264 or equivalent 3 ch
CHEM 1001 and CHEM 1006 5 ch
PHYS 1051 and PHYS 1091 5 ch
Year 3 and 4 (61 ch)
Required Core to be completed in 3rd year
KIN 3001 Introduction to Research Methods in Kinesiology 3 ch
KIN 3201 Exercise Prescription 4 ch
KIN or RSS Electives (Choose 30 ch)(see **NOTE** 1, 2 & 3 below) 30 ch
KIN or RSS or Non-KIN/RSS Electives (Choose 24 ch)(see **NOTE** 1 & 2 below) 24 ch
TOTAL 131 ch
NOTES:
NOTE 1: Of the 54 ch of KIN/RSS and NON-KIN/RSS electives in 3rd and 4th year at least 30 must be at the 3000/4000 level
NOTE 2: See academic advisor for suggested KIN and NON-KIN electives.
NOTE 3: Laboratory Requirement - for the 5 core areas of Biomechanics, Exercise Physiology, Motor Learning/Control, Psychology of Physical Activity and Human Anatomy, students must take a minimum of 1 course in 1 core area. See academic advisor for applicable laboratory courses.
Honours Program: BScKin

1. The Honours program provides students with the opportunity to undertake academic research and be recognized as one of the Faculty's top students. Upon successful completion of the program, "Honours" is printed on the student's official academic transcript. See academic advisor for application procedures.
2. Application requirements include: minimum CGPA of 3.7, must be in one's final year of study, must identify a faculty member willing to serve as one's Honours Research Project supervisor.
3. Once accepted into the program, students must: outline the required deliverables and expectations of the Honours project which will be approved by the Honours supervisor before being submitted to the Assistant Dean of the Undergraduate Program no later than Oct. 15th. This outline (one or two pages) briefly describes: i) the nature of the study being conducted, ii) timelines, iii) deliverables and expectations. This outline serves as a course contract between the student and the supervisor.
4. To graduate with a BScKin Honours, students must meet the following requirements: maintain a minimum CGPA of 3.5 throughout one's undergraduate degree; successfully complete KIN 4900 Honours Research Project.

Pre-Professional Program in Kinesiology
the BScKin degree program provides a variety of courses for students who are interested in pursuing a professional degree such as: Medicine, Chiropractic, Athletic Therapy, Physiotherapy, Occupational Therapy, and Massage Therapy. Experience has shown, where possible, that it is highly desirable for the pre-professional student to obtain a bachelors degree before applying for entrance to the professional school. Each professional school has its own specific entrance requirements and it is necessary that the student ascertain these requirements in order to be sure of qualifying as a candidate for admission to that particular school. Interested students should meet with their academic advisor before selecting their courses.
Minor in Ergonomics
The Minor in Ergonomics is designed for students from inside and outside the Faculty of Kinesiology interested in a coherent package of Ergonomics related courses. Students interested in the minor, must apply through the Undergraduate Degree Program. Enrolment is limited. Students enrolled in the Minor will be required to take 18 ch of required courses and 6 ch of elective courses chosen in consultation, and in advance, with the Faculty of Kinesiology. A grade of C or better is required in each course used towards the Minor.
REQUIRED COURSES (18 credits)

KIN 3161 Human Factors in Ergonomic Design (3 ch)
KIN 3166 Cognitive Aspects of Human Performance (3 ch)
KIN 4161 Occupational Biomechanics (3 ch)
KIN 4162 Occupational Health and Safety for Ergonomists (3 ch)
KIN 4165 Occupational Physiology (3 ch)
KIN 4903 Directed Study in Ergonomics (3 ch) - an ergonomics project. (see KIN 4900 below)

ELECTIVES (6 ch) – select 6 ch from the following

1. KIN 4163 Workplace Ergonomic Design & Analysis (3 ch)
2. KIN 4900 Honours Research Project (6 ch) - 3 ch shall be applied in lieu of KIN 4903 above. Students cannot get credit towards the Minor for both courses.
3. RSS 5071 Careers and People Management in Recreation and Sport Organizations (3 ch)
4. ADM 2815 Human Resource Management (3 ch)
5. ADM 3875 Labour Relations (3 ch)
6. ADM 4826 Employment Law (3 ch)
7. ME 3232 Engineering Economics (3 ch)

BACHELOR OF SCIENCE IN SOFTWARE ENGINEERING

General Office:	Department of Electrical and Computer Engineering Head Hall, Room D36 and/or Faculty of Computer Science Information Technology Centre, Room ITC314
Mailing Address:	Program Coordinator, Software Engineering Program Faculty of Engineering/Faculty of Computer Science University of New Brunswick, P.O. Box 4400, Fredericton, N.B., Canada, E3B 5A3
Phone:	(506) 453-4561 or (506) 453-4566
Fax:	(506) 453-3589 or (506) 453-3566
Email:	swe@unb.ca
Website:	http://unb.ca/fredericton/engineering/undergrad/swe/

General Information

Software Engineering was established at UNB as a separate discipline in 2000. the BScSwE is administered jointly by the Department of Electrical and Computer Engineering and the Faculty of Computer Science. The program educates professionals who apply engineering techniques to the design, implementation, testing and maintenance of software products. The Software Engineering Program is accredited by both the Engineers Canada and the Canadian Information Processing Society. Students graduating from the program will be eligible for registration as an Information Systems Professional and will have fulfilled the academic requirements for licensure as a Professional Engineer In Canada. the BScSwE is designed as a four-year program or five years if undertaken in conjunction with the Co-op or Professional Experience Program. Students entering the program are strongly encouraged to participate in either Co-op or PEP, as it is widely recognized that the experience gained is a valuable component of a Software Engineering background. A description of these Cooperative Education Programs is found in the Bachelor of Computer Science and Bachelor of Science in Engineering degree program descriptions.
The Faculty of Computer Science also offers the following degree programs:

- Bachelor of Computer Science

The Faculty of Engineering also offers the following degree program:

- Bachelor of Science in Engineering

Curriculum

The program is designed to be completed in 8 study terms. Because the BScSwE is considered an engineering degree, the General Regulations, including minimum credit hour requirements that are listed under Bachelor of Science in Engineering, apply to the BScSwE program. The program consists of required "core" courses, basic science electives, technical electives and complementary studies electives. The first year of the program includes many fundamental math, science, and engineering courses common to all Engineering programs. Students transferring from BScE.UNDC will have all of their courses transferred to BScSWE, but only those common to the BScSWE, with grades of C or better, will count towards program credit. Students transferring from New Brunswick Community Colleges will be eligible to receive up to one year of credits toward the Software Engineering degree. A minimum grade of C is required for all courses used for credit towards the BScSwE degree.

Core Courses

CHEM 1982 General Applied Chemistry
CHEM 1987 General Applied Chemistry Laboratory
CS 1073 Introduction to Computer Programming I (in Java)
CS 1083 Introduction to Computer Programming II (in Java)
CS 1103 Introduction to Databases
CS 1303 Discrete Structures
CS 2043 Software Engineering I
CS 2263 Systems Software Development
CS 2333 Computability and Formal Languages
CS 2383 Data Structures and Algorithms
CS 2413 Information Security
CS 2613 Programming Languages Lab
CS 3383 Algorithm Design and Analysis
CS 3413 Operating Systems I
CS 3503 Systems Analysis, Design and Project Management
ECE 1813 Electricity and Magnetism
ECE 2021 Electrical Design, Experimentation, and Measurements
ECE 2214 Digital Logic Design
ECE 2215 Digital Logic Design Laboratory
ECE 2701 Electric Circuits and Electronics (for non-electricals)
ECE 3221 Computer Organization
ECE 3232 Embedded Systems Design
ECE 4242 Computer Architecture
ECE 4812 Data Communications and Networking
or CS 3873[1] Net-centric Computing
ENGG 1001 Engineering Practice Lecture Series

ENGG 1003 Engineering Technical Communications
ENGG 1015 Introduction to Engineering Design & Problem Solving
ENGG 4013 Law & Ethics for Engineers
MATH 1003 Introduction to Calculus I
MATH 1013 Introduction to Calculus II
MATH 1503 Introduction to Linear Algebra
ME 3232 Engineering Economics or CE 3963 Engineering Economy
PHYS 1081 Foundations of Physics for Engineers
STAT 2593 Probability and Statistics for Engineers
SWE 4040 Software Engineering Design Project or ENGG 4000[2] Senior Design Project
or TME 4025[3] Product Design and Development
SWE 4103 Software Quality and Project Management
SWE 4203 Software Evolution and Maintenance
SWE 4403 Software Architecture and Design Patterns

NOTES:

1. CS 3873 is a prerequisite for the technical elective CS 4865.
2. Capstone design course prerequisites for software engineering students: CS 3503 or at least 2 terms of co-op and 100 ch in the software engineering program or permission from the instructor.
3. Permission from program coordinator is required to take ENGG 4000 or TME 4025 in lieu of SWE 4040.

Electives

Basic Science Electives

Core courses in Basic Science include PHYS 1081, CHEM 1982 and CHEM 1987. A minimum of 5 ch of other Basic Science courses must be chosen from Physics, Chemistry and the life or earth sciences. NOTE: Students with credit in APSC 1013 and APSC 2023 (or APSC 1023) will be given for credit for PHYS 1081. Students with credit in APSC 1013 and both APSC2023 and APSC2028 will be given credit for PHYS 1081 and 3 ch of basic science electives.

Technical Electives

Each student is required to take 4 technical elective courses (minimum of 14 ch) chosen from the following list. Other senior level courses may be taken subject to approval by the Software Engineering Coordinator.
CS 2053 Introduction to Game Development
CS 2063 Introduction to Mobile Application Development
CS 2545 Data Science for Big Data Analytics
CS 3025 Human-Computer Interaction
CS 3043 Software Engineering II
CS 3103 Programming on the Web
CS 3543 Database System Administration
CS 4065 Interactive Human-centred Systems
CS 4355 Cryptanalysis and Database Security
CS 4405 Operating Systems II
CS 4411 Fundamentals of Information Assurance
CS 4413 Foudnations of Privacy
CS 4415 Network Security
CS 4417 Software Security
CS 4419 Digital Forensics
CS 4545 Big Data Systems
CS 4613 Programming Language Interpretation
CS 4725 Introduction to Artificial Intelligence
CS 4735 Computer Graphics
CS 4745 Introduction to Parallel Processing
CS 4865 Principles of Data Communications and Networks Modeling
CS 4905 Introduction to Compiler Construction
CS 4935 Advanced Algorithmic Techniques
CS 4998 Open Source Project
ECE 2412 Simulation and Engineering Analysis or CS 3113 Introduction to Numerical Methods
ECE 4261 Digital Systems Design
ECE 4433 Safety-Critical System Design
ECE 4823 Communications and Network Engineering
ECE 4913 Independent Project
ECE 4923 Introduction to Biomedical Engineering
ECE 4943 Topics in Computer Engineering
SWE 4303 Performance Analysis of Computer Systems
SWE 4913 Independent Project

Complementary Studies Electives

The program requires 9 credit hours (typically three 3 credit hour courses) of Complementary Studies Electives (CSE). The choice of courses is subject to the following restrictions:

1. Three credit hours must be a course addressing the impact of technology on society. A list of appropriate courses is available from the BScSwE program coordinator.
2. At least three additional credit hours must be in the Humanities and Social Sciences (HSS). This includes courses from Classics, Literature, History, Philosophy, Anthropology, Political Science, and Sociology.
3. The remaining credit hours may be taken from the faculties of Arts (including HSS), Business Administration, Renaissance College, or

through Technology Management and Entrepreneurship (TME) subject to the approval of the program coordinator. No more than three credit hours of language courses may be used for credit toward the BScSWE Degree. ENGL 1103 is strongly encouraged.

Students are encouraged to seek out courses of interest and value to them. Other complementary studies courses may be taken subject to approval by the Software Engineering Coordinator.

Biomedical Engineering Option in Software Engineering

Biomedical engineering is the application of engineering principles in biological systems. This SWE option explores applications of engineering that are well suited for biomedical use. The purpose of the option is to give students experience with biomedical terminology and ways of thinking, such that they are familiar with the topics they would need to learn in an advanced degree or in order to work with health-care providers, biomedical companies, and solve important problems that pertain to our health and well being.

Students may not enrol in the option until they have completed 80 ch, although they are encouraged to integrate appropriate coursework (including *Prerequisites*) into their broader plan. Courses chosen to count towards the option must be approved by the option coordinator.

Enrolment in this option will likely result in an extra term; students must ensure coursework schedules.

The option comprises a project-based course in the area of biomedical engineering (described in section A below) along with 20 credit hours from UNB courses described in sections B-C below. Some of these courses taken as part of the option may also be used as technical electives in the SWE program.

Students must complete:

A. One of SWE 4040, TME 4025, ENGG 4025, SWE 4913 or ECE 4913 with a biomedical application.
B. One of APSC 3953 Basis of Biomedical Engineering (3 ch) or ECE 4923 Intro to Biomedical Engineering (4 ch)
C. The remaining credit hours (16 or 17) must be selected from the following courses. An asterisk denotes highly recommended.

* BIOL 2792 Human Physiology (3 ch)
* CS 2545 Data Science for Big Data Analytics (3 ch)
* CS 3025 Human-Computer Interaction (3 ch)
* CS 4065 Interactive Human-centered Systems (3 ch)
* CS 4725 Introduction to Artificial Intelligence (4 ch)
* ECE 4343 Haptic Robotics (4 ch)
* ECE 4433 Safety Critical Design (4 ch)
* ECE 4553 Intro to Pattern Recognition (4 ch)
* ME 5913 Biomechanics (4 ch)
* STAT 3373 Elementary Experimental Design (3 ch)
* EE 6913 Advanced Biomedical Instrumentation (3 ch)
BIOL 1719 Human Anatomy (4 ch)
BIOL 3033 Cell Signaling (3 ch)
BIOL 4533 Bioinformatics: Computational Analysis of Genes and Genomes (4 ch)
CHEM 4503 Biocomputing in Drug Design (5 ch)
CS 4545 Big Data Systems (4 ch)
ECE 3111 Electronics I (4 ch)

JURIS DOCTOR

Faculty of Law
FACULTY

- Alexander, Basil, BArtsSc (McMaster), LLB, MpA (UVic), LLM (Toronto), Asst Prof - 2019
- Austin, Janet E., BComm, LLB (UNSW), LLM (Sydney), PhD (Toronto), Assoc Prof – 2010
- Bowley, Gregory F. W., BA (Vind), MA, LLB (UNB), LLM, Asst Prof - 2019
- Chatterjee, Aloke, BSc, LLB (Dal), LLM (Harv), Assoc Prof - 2003
- Froc, Kerri, BA (Regina), LLB (York), LLM (Ottawa), Asst Prof – 2017
- Kleefeld, John, BA (Waterloo), LLB (UBC), LLM (York), Prof - 2017
- La Forest, Anne W., BA (Ott), LLB (UNB), LLM (Cantab), Prof - 1996
- Marin, Michael, BSc (Acadia), MA (Carleton), LLB (Ott), LLM (Cambridge), Assoc Prof and Dean – 2016
- O'Byrne, Nicole, BSc (Qu), LLB (Sask), BA (Regina), LLM (McG), PhD (UVic), Assoc Prof – 2009
- Panezi, Maria, LIB (UAthens), LLM (NYU), PhD (York), Asst Prof - 2019
- Pearlston, Karen F., LLB (York), LLM (UBC), PhD (York), Assoc Prof - 2001

ECE 3122 Electronics II (4 ch)
ECE 3312 Systems and Controls (4 ch)
ECE 3511 Signals (4 ch)
ECE 4133 Instrumentation Design (4 ch)
ECE 4531 DSP 1 (4 ch)
ECE 4523 Communication Systems (4 ch)
KIN 2062 Intro. To Biomechanics (3 ch)
KIN 2072 Introduction to Motor Control and Learning (3 ch)
KIN 3041 Disability Awareness (3 ch)
KIN 3061 Advanced Biomechanics (4 ch)
KIN 3081 Physiological Basis for Physical Activity (3 ch)
KIN 3161 Human Factors in Ergonomic Design (3 ch)
KIN 2252 Functional Human Anatomy (4 ch)
KIN 3282 Physical Activity, Health and Wellness (3 ch)
KIN 4041 Movement Disorders (3 ch)
KIN 4063 Biomedical Instrumentation and Data Acquisitions (3 ch)
KIN 4072 Neural Control of Human Movement (3 ch)
KIN 4161 Occupational Biomechanics (3 ch)
KIN 4162 Occupational Healthy and Safety Ergonomics (3 ch)
KIN 4163 Workplace Ergonomic Design and Analysis (3 ch)
KIN 4281 Measurement and Evaluation in Exercise Science (4 ch)
KIN 4165 Occupational Physiology (3 ch)
PHYS 5992 Magnetic Resonance Imaging (3 ch)
STAT 5293 Applied Statistics (3 ch)

Software Engineering (BScSwE) Entrance Program

Students admitted to the Software Engineering Entrance Program are considered fully-accepted students with an acceptance condition that missing requirement be met by taking an approved University course before transfer tp the Bachelor of Science in Software Engineering. Condiions of acceptance will be provided to the students with their letter of acceptance.

Entrance students must complete at least 12 credit hours per term and remain in good academic standing. Courses taken while enrolled in the Software Engineering Entrance Program will be considered for degree credit by the program into which the student is ultimately enrolled.

The Software Engineering Entrance Program is a terminal program. Students who fail to meet conditions of their acceptance or rules of the program within their first academic year will be required to withdraw from the Faculty. Students who withdraw in this manner will be eligible to apply to admission to other Faculties.

General Notes

1. University studies courses (e.g. UNIV 0101 and Academic AESL courses (e.g. AESL 1011) will not be counted for credit toward BScSWE degree program.

- Perryman, Banjamin, BSc (UBC), JD (York), MDE (Dal), LLM (Yale), Asst Prof - 2020
- Siebrasse, Norman V., BSc, LLB (Qu), LLM (Chic), Prof - 1993
- Thomson, Jane, BA (Carleton), MS (Simon Fraser), LLB (Dal) LLM (Harv) - Asst Prof - 2016
- Urinov, Vokhid, LLB (Tashkent State) LLM (Frankfurt), PhD (McG), Asst Prof - 2015
- Young, Hilary A. N., BA (Mt A), MA, PhD (Rice), LLB (Ott), LLM (Harv), Assoc Prof - 2012

The Faculty of Law offers a full-time three-year course leading to the Juris Doctor (JD) degree. Established in 1892, the Faculty has about 265 students from across the country.
For detailed information on admissions policy and procedure, a description of the school and program, please consult the Faculty of Law, Admissions Guide, available from the Law Admissions Office, Faculty of Law, PO Box 44271, Fredericton, NB, E3B 6C2. Phone: 506-453-4693. Email to: lawadmit@unb.ca or visit our website at http://www.unb.ca/fredericton/law/admissions/.
For the Faculty of Law Regulations and Course Descriptions, see the Faculty of Law Calendar, available from the Law General Office, Faculty of Law, PO Box 4400, Fredericton, NB, E3B 5A3. Phone: 506-453-4669 or visit our website at http://www.unb.ca/fredericton/law/.

Standard Courses Abbreviations

Aboriginal Education	ABRG
Academic ESL	AESL
Anthropology	ANTH
Applied Science	APSC
Arabic	ARAB
Archaeology	ARCH
Arts	ARTS
Astronomy	ASTR
Biology	BIOL
Bridging Year for Aboriginal Students	BY
Business Administration	ADM
Chemical Engineering	CHE
Chemistry	CHEM
Chinese	CHNS
Civil Engineering	CE
Classics and Ancient History	CLAS
Computer Engineering	CMPE
Computer Science	CS
Comparative Cultural Studies	CCS
Criminology & Criminal Justice	CRIM
Drama	DRAM
Economics	ECON
Education	ED
Electrical Engineering	EE
Engineering	ENGG
English	ENGL
Environment and Natural Resources	ENR
Environmental Studies	ENVS
Earth Sciences	ESCI
Fine Arts	FNAT
Forestry	FOR
Forest Engineering	FE
French	FR
French/Linguistics	FR/LING
Family Violence Issues	FVI
Gender and Women's Studies	GWS
Geodesy & Geomatics Engineering	GGE
Geography	GEOG
Geological Engineering	GE
German	GER
German Studies	GS
Greek	GRK
History	HIST
International Development Studies	IDS
Japanese	JPNS
Kinesiology	KIN
Latin	LAT
Law	LAW
Law in Society	LWSO
Linguistics	LING
Mathematics	MATH
Mechanical Engineering	ME

Media Arts & Culture	MAAC
Medical Laboratory Science	MLS
Multimedia Studies	MM
Nursing	NURS
Philosophy	PHIL
Physics	PHYS
Political Science	POLS
Psychology	PSYC
Publishing	PUB
Recreation & Sports Studies	RSS
Russian & Eurasian Studies	RUSS
Sociology	SOCI
Software Engineering	SWE
Spanish	SPAN
Statistics	STAT
Technology Management & Entrepreneurship	TME

Course Numbers

Although the University is on a course credit system and has tended to move away from the idea of a rigid specification with respect to which year courses should be taken, yet there is some need to provide information as to the level of the course.

The various disciplines and the courses which they offer are presented in alphabetical order.

The course numbers are designated by four digits.

First Digit designates the level of the course:

1 - Introductory level course

2 - Intermediate level course which normally has *Prerequisites*.

3, 4 and 5 - Advanced level course which requires a substantial background.

6 - Postgraduate level course

Second and Third Digits designate the particular course in the Department, Division or Faculty.

Fourth Digit designates the duration of the course: 0 Year (or full) course normally offered over two terms.1-9 Other than full year courses.

Departments may assign specific meanings to these digits; consult the departmental listings.

Codes

The following codes are used in course descriptions:

A - alternate years	R - reading course
ch or cr - credit hours	S - seminar
C - class lecture	T - tutorial
L - laboratory	[W] - English writing component
LE - limited enrolment	WS - workshop
O - occasionally given	* - biweekly courses
P - programming	

For example, 6 ch (3C 1T, 2C 2T) designates a course with 6 credit hours: 3 class lecture hours and 1 tutorial hour per week in the first term; 2 class lecture hours and 2 tutorial hours per week in the second term.

Combinations of class lectures, laboratories, seminars, etc., are indicated by a slash line, e.g., 5C/L/S.

Before registration, check all course offerings in the official Web Timetable (http://es.unb.ca/apps/timetable/). Not all courses listed are given every year.

ABORIGINAL STUDIES

Includes courses reserved for students registered in courses administered by the Mi'kmaq-Wolastoqey Centre for Indigenous Students.

ABRG1001 Essential Skills for Wolastoqey/Mi'kmaq Students 3 ch (2C 3L)

Students will explore the purpose of higher education as well as the roles and responsibilities that students have in determining their own success. The course will prepare students for university by helping them to develop appropriate research, writing and reflective thinking skills while exploring the relationship between education, language, culture and identity as well as the importance of a healthy balance in one's life as a contributor to success (for students registered in courses administered by Mi'kmaq-Wolastoqey Centre only).

ABRG1411   Finite Mathematics   3 ch

Introductory mathematics for students with a limited background in mathematics. Topics include algebra, coordinate geometry, matrices and systems of linear equations, linear programming concepts, and elementary probability (for students registered in courses administered by Mi'kmaq-Wolastoqey Centre Institute only).

ABRG1412   Elementary Calculus   3 ch

Polynomial, logarithmic and exponential functions. Limits and derivatives. Simple integration. Applications to business and economics (for students registered in courses administered by Mi'kmaq-Wolastoqey Centre only).

ABRG3055   First Nations Leadership Foundations   3 ch

Examines First Nations theories and models of leadership. Explores best practices for leadership at the individual and community levels and considers how to balance both traditional First Nations values and contemporary needs of First Nations communities.

ABRG3056   Practicing Leadership in   3 ch
First Nations Community Projects

Exposes learners to leadership models in the context of diverse First Nations communities and national First Nations organizations. Prepares learners to initiate, plan, execute and close a leadership project.

ABRG3109   Independent Studies   3 ch

Students will normally be limited to 6 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

ABRG3114   Introduction to Workplace Learning in First Nations   3 ch
Communities

Provides learners with an appreciation of the origins and trends in workplace learning. The course examines the workplace as a learning environment. Various approaches to adult learning within the changing context of work will be examined with specific focus on First Nations communities.

ABRG3363   Communications: Speaking Practice   3 ch

Writing and presentation of a speech. Students prepare, present, analyze and criticize a variety of speeches, relating skills to classroom teaching (for students in the Bridging Year or BEd for First Nations only).

ABRG3682   Kikuwosson/Wksitqamu: A land-based field course   3 ch

Experience the inter-connected relationship Wabanaki people have had with the homelands since time immemorial. Students participate in cultural-based activities and learn about traditional Wabanaki food security, medicinal plants, spiritual connectivity to the land and Wabanaki land-based histories, languages and concepts. **NOTE:** Over 3 nights and 4 days, a small cohort of students stay at a camp in the woods.

ABRG3684   Aspects of Wolastoqey and Mi'kmaq Culture   3 ch

Historical and contemporary perspectives on changes that have affected Mi'kmaq and Maliseet cultures and societies since the time of contact; emphasis on issues relating to education, economic development, spirituality, self-government, land claims.

ABRG3685   Mi'kmaq Language I   3 ch

Elements of Mi'kmaq: phonology, morphology, syntax. Field methods. Instructional materials and approaches.

ABRG3686   Wolastoqey Language I   3 ch

Elements of Maliseet: phonology, morphology, syntax. Field methods. Instructional materials and approaches.

ABRG3686   Wolastoqey Latuwewakon I   3 ch

'Ciw wen ketuwokehkimsit eluwehket wolastoqey latuwewakon, tan eltaqahk naka tan eluwikhasik. 'Ciw wen ketuwokisit naka ketuwewestaq.

ABRG3688   Contemporary Canadian First Nations   3 ch
Children's Literature

Books for primary and elementary children written by Canadian First Nations authors. Examines the Indigenous voice in Indigenous and non-Indigenous worlds in relation to traditional beliefs and current cultural concerns.

ABRG3695   Mi'kmaq Language II   3 ch

Further studies in Mi'kmaq. *Prerequisites:* 3 ch in Mi'kmaq Language.

ABRG3696   Wolastoqey Latuwewakon II   3 ch

'Ciw wen keti ankuwokehkimsit wolastoqey latuwewakon, tahalu eluwikhasik, elewestuhtimok naka atkuhkewakonol. 'Ciw yukt kisi wihqehtuhtit ABRG 3686, 3687, kosona wolitahatok nutokehkikermit.

ABRG3696   Wolastoqey Language II   3 ch

Second-level course in Maliseet, focused on syntax, conversation, storytelling. *Prerequisites:* ABRG 3686 or 3687 or permission of instructor.

ABRG3922   Technology in Governance and Leadership   3 ch

Examines critically the use of software, hardware, and web-based services in First Nations community governance and leadership. The emphasis is on application of, and real-world issues surrounding, the Internet, productivity software, social media, as well as computer hardware and system maintenance in overcoming current technological and community administrative challenges.

ABRG4109   Independent Studies   3 ch

Students will normally be limited to 6 ch of independent study. *Prerequisites:* Permission of an instructor is required before registration.

ABRG4194   Land Claims   3 ch

Examines the reconciliation of Aboriginal rights with the modern Canadian state through the presentation of claims, and negotiation and adjudication of specific and comprehensive land claims agreements including recognition of Aboriginal self-government.

ABRG4664   First Nations Entrepreneurship   3 ch

An introduction to the theory behind successful entrepreneurship; principles and practical application of starting and maintaining a small business within a First Nations government. Guest speakers from local First Nations businesses, government agencies, funding institutions.

ABRG4665 First Nations Perspectives and Organizational Behaviour 3 ch

Introduction to the Medicine Wheel and how the values inherent in its teachings can be applied to groups, organizations, and communities. Students will relate ideas and concepts behind the Medicine Wheel to organizational structures in both mainstream and First Nations societies.

ABRG4675   Mi'kmaq Language III   3 ch

This third-level course will focus on Mi'kmaq language grammar, word and sentence formation, in speaking and listening through storytelling, conversation and songs.

ABRG4676   Mi'kmaq and Language IV   3 ch

This fourth level course will focus on Mi'kmaq vocabulary development, fluency in speech and literacy skills.

ABRG4686   Wabanaki World Views   3 ch

This course will introduce the Worldviews of the Wolastoqey, Mi'kmaq, Passamaquoddy and Penobscot Nations. The values, beliefs, and ethics of the Wabanaki people will be explored in historical and contemporary contexts. Values and beliefs embedded within language, ceremonies, traditions, and institutional structures of Wabanaki people will be examined.

ABRG4696   Wolastoqey Language III   3 ch

Focus on grammar, word and sentence formation, in speaking and listening, through storytelling, conversation, and songs. *Prerequisites:* 6 ch in Wolastoqey Language or permission of instructor.

ABRG4696   Wolastoqey Latuwewakon III   3 ch

'Ciw yut wen keti ankuwi skicinuwatuwet naka wen keti piyemi woli 'sotok atkuhkakonol, mecimiw elewestuhtimkopon naka elewestuhtimok, kapiw 'kaneyal naka pileyal lintuwakonol. 'Ciw yukt kisi wihqehtuhtit kinaq neqcikotok, kosona wolitahatok nutokehkikemit.

ABRG4697   Wolastoqey Language IV   3 ch

Focus on vocabulary development, fluency in speech, literacy skills. *Prerequisites:* 9 ch in Wolastoqey Language or permission of instructor.

ABRG4697   **Wolastoqey Latuwewakon IV**   **3 ch**

'Ciw yut wen keti ankuwi kcicihtaq skicinuwatuwewakon, pciliw eluwikhasik, wolama 'tawi olonuwatuwe. 'Ciw yukt kisi wihqehtuhtit kinaq neqcikotok cel epahsiw, kosona wolitahatok nutokehkikemit.

ACADEMIC ESL

See beginning of Section H for abbreviations, course numbers and coding.

AESL1011   **English as a Second Language for**   **3 ch (3C) [W]**
               Academic Purposes

A practical course in the written and spoken use of language designed to meet the requirements of students whose first language is not English. Students are placed in groups based on placement testing results, subsequent interviews and in-class assessment procedures. Specialized curriculum is designed and delivered according to the needs of the students as assessed at the beginning of each term. Students may enrol in both AESL 1011 and AESL 1012 as they are not sequential in nature. Students are required to use only English during each three-hour class period. *Prerequisite:* All students must take a placement test to determine specific language needs. **NOTE**: Students who already have credit for ENGL 1011 cannot obtain credit for AESL 1011.

AESL1012   **English as a Second Language for**   **3 ch (3C) [W]**
               Academic Purposes

A practical course in the written and spoken use of language designed to meet the requirements of students whose first language is not English. Students are placed in groups based on placement testing results, subsequent interviews and in-class assessment procedures. Specialized curriculum is designed and delivered according to the needs of the students as assessed at the beginning of each term. Students may enrol in both AESL 1011 and AESL 1012 as they are not sequential in nature. Students are required to use only English during each three-hour class period. *Prerequisite:* All students must take a placement test to determine specific language needs. **NOTE**: Students who already have credit for ENGL 1012 cannot obtain credit for AESL 1012.

AESL2011   **Exploration of Literary English for**   **3 ch (3C) [W]**
               Non-Anglophones

More advanced than AESL 1011 and AESL 1012. Exclusively for students whose first language is not English. Encompasses examination of prose and extensive composition. Emphasis is given to consideration of sophisticated English expression. Each student's level of proficiency is determined through testing, subsequent interviews and in-class assessment procedures. Students may enrol in both AESL 2011 and AESL 2012 as they are not sequential in nature. *Prerequisites:* Successful completion of AESL 1011, AESL 1012 or equivalent proficiency. All students must take a placement test to determine specific language needs. **NOTE**: Students who already have credit for ENGL 2011 cannot obtain credit for AESL 2011.

AESL2012   **Exploration of Literary English for**   **3 ch (3C) [W]**
               Non-Anglophones

More advanced than AESL 1011 and AESL 1012. Exclusively for students whose first language is not English. Encompasses examination of prose and extensive composition. Emphasis is given to consideration of sophisticated English expression. Each student's level of proficiency is determined through testing, subsequent interviews and in-class assessment procedures. Students may enrol in both AESL 2011 and AESL 2012 as they are not sequential in nature. *Prerequisites:* Successful completion of AESL 1011, AESL 1012 or equivalent proficiency. All students must take a placement test to determine specific language needs. **NOTE**: Students who already have credit for ENGL 2012 cannot obtain credit for AESL 2012.

ANTHROPOLOGY

See beginning of Section H for abbreviations, course numbers and coding.

ANTH1001   **Introduction to Socio-Cultural Anthropology**   **3 ch (3C)**

What makes us different from each other? What makes us similar? Exploring and comparing practices of kinship, politics, economics and religion in societies from around the world give us powerful insights into the unique human capacity to create cultures, and into the ways in which culture is fundamental and essential to our shared human experience.

ANTH1002   **Introduction to Archaeology and**   **3 ch (3C)**
               Biological Anthropology

This course considers long-term human biological and cultural change. The course introduces biological anthropology via the study evolutionary processes, the human evolutionary tree, and human diversity. This course then considers questions surrounding the evolution of culture and language. To introduce archaeology, the course presents processes of cultural change and major archaeological discoveries from paleolithic, mesolithic, pre-contact and historical cultures. Throughout, emphasis is placed on how archaeological and paleoanthropological sites are formed and studied. The course includes a variety of laboratory exercises. Students who receive credit for ANTH 1303/ARCH 1303 cannot receive credit for ANTH 1002.

ANTH2101   **Foundations of Socio-Cultural Anthropology**   **3 ch (3C) [W]**

Using ethnographic research and cross-cultural social comparison, socio-cultural anthropologists attempt to understand the lived experience of people. Case studies drawn from classical and contemporary ethnographic accounts are used to develop a foundation in socio-cultural anthropology with a comparative approach to human social organization, through a focus on kinship and political systems.

ANTH2303   **Exploring the World of Archaeology**   **3 ch (3C) [W]**

This course addresses central dynamic tensions in Archaeology and their impact on archaeological practice, including culture history versus cultural process; materialist versus idealist approaches to the past; processual versus post-processual archaeologies; archaeology as a study of the archaeological record versus archaeology of as a study of past human cultures; academic archaeology versus cultural resource management; archaeology and Aboriginal peoples. Students who receive credit for ARCH 2303 cannot receive credit for ANTH 2303. *Prerequisite:* ANTH 1002 (or equivalent) or permission of the instructor.

ANTH2304   **Great Discoveries in World Archaeology**   **3 ch**

This introduction to world archaeology is intended for all students interested in the origins of humans and in early civilizations. An approximately chronological scheme is used, beginning with our origin as a species and leading up to the development of agriculture, writing, and the emergence of complex societies and civilizations, in the Old World and the New World.

ANTH2504   **Introduction to Medical Anthropology**   **3 ch (3C) [W]**

This course is designed to introduce students to the discipline of medical anthropology, which is accomplished by focusing on the ways in which illness, health, and healing are embedded within social, political, and cultural systems. Selected case studies are used to examine i) how different medical systems define health and illness, and how they treat categories of disease? ii) What happens when western medicine confronts folk understandings of illness in such a way that the two clash? iii) How anthropologists investigate and respond to the study of pain, illness, suffering, and healing in specific contexts? iv) How do seemingly local and global cultural processes shape aspects of our bodies, such as illness, sex, and death? This course also explores biomedicine as a powerful cultural belief system that is global in its scope, creates disease categories, and produces authoritative knowledge. Finally, medical pluralism and pertinent case studies are examined to understand the integration of western and traditional medical systems.

ANTH2505   **Biological Anthropology**   **3 ch (3C) [W]**

Biological anthropologists attempt to reconstruct the lives of people using human remains from both forensic and archaeological contexts. In this course, students are introduced to the application of biological anthropology to past human populations through analysis of their biological remains (bones, teeth and preserved soft tissues). Topics include: determining and understanding population demographics (age, sex, ancestry, and stature), health and disease, chemical and genetic analysis, and quantitative methods and population studies. *Prerequisite*: ANTH 1002 (or equivalent) or permission of the instructor.

ANTH2801   **Food and Culture (Cross-Listed: SOCI 2801)**   **3 ch**

Introduces theories and methods in the growing field of food studies. Few things are more important to human beings than food. Food is profoundly cultural, which makes it a topic of interest to social scientists concerned with the comparative study of culture and society across time and space. On the one hand, what is considered edible, what is seen as good to eat, and how it all embeds in changing ways of life all varies depending on cultural, social, economic, and political contexts. On the other hand, thinking about nutrition, energy, diet, and what is left behind opens a valuable window on societies past and present. The course goal is a practical guide to the study of food, its core ideas, and its methodologies, with the goal of bringing order and insight to diverse relationships between people and what they eat. **NOTE:** Credit can only be obtained for *one* of ANTH 2801 and SOCI 2801.

ANTH3014   **Issues in Anthropological Theory (O)**   **3 ch (3C) [W]**

Examines landmark theories and enduring debates in order to encourage students to evaluate anthropological theories and to think more critically about the nature of theory in the social sciences. *Prerequisites:* Any 2000-level anthropology course or permission of the instructor.

ANTH3051   **Work-Study in Anthropology (O)**   3 ch (3L)

This course allows students to receive university credit for experience in social science research gained under the supervision of a university-seated researcher or from a non-university organization. Registration: Students may only register after making arrangements for supervision and grading with the department.

ANTH3052   **Anthropological Statistics and Methods**   3 ch (2L 1S) [W]

This course addresses quantitative anthropological research design and statistical analysis. The course guides students through the process of anthropological research: formulating a research question, choosing a methodology, collecting and analysing data, and producing a project report. Students can incorporate archaeology, social anthropology and medical anthropology, research interests into their research projects. *Prerequisite:* Any 2000-level anthropology course or permission of the instructor.

ANTH3114   **Gender, Sex and Culture**   3 ch (3C) [W]

How do human gender roles vary from culture to culture and over time? How has anthropology attempted to explain these variations? What are the implications for the nature/nurture debate? Examples are drawn from archaeology, biological anthropology, and socio cultural studies. *Prerequisite:* Any 2000-level anthropology course, or permission of the instructor.

ANTH3116   **Symbolism and Ritual**   3 ch (3C) [W]

Examines a wide range of belief of systems in order to introduce students to the study of religions from an anthropological perspective. *Prerequisite:* Any introductory anthropology course or permission of the instructor. *Note:* Students cannot obtain credit for both ANTH 2174 and ANTH 3116.

ANTH3117   **Human Systems of Exchange: Nature**   3 ch (3C) [W]
                              and Culture

Compares and critically evaluates different approaches to human systems of exchange through a focus on economic anthropology. Covers diverse contemporary and classical topics in the field through a selection of different theoretical approaches to examine foragers, horticulturalists, pastoralists, peasants, and state societies and investigate their systems of exchange with each other and their relationships with the environment. *Prerequisites:* Any introductory anthropology course or permission of the instructor. *Note:* Students cannot obtain credit for both ANTH 2114 and ANTH 3117.

ANTH3301   **The Prehistory of North America (A)** 3 ch (3C) (LE) [W]

This course surveys of the cultural history of North America through an in-depth examination of the origins and development of the Native cultures of North America, from the earliest traces to European contact. *Prerequisite:* ANTH 2303 or permission of the instructor.

ANTH3303   **The Archaeological Traditions**   3 ch (3C) (LE) [W]
                              of North America

This course presents a detailed examination of the historical, theoretical and methodological development of Americanist archaeology. *Prerequisite:* ANTH 2303 or permission of the instructor

ANTH3341   **Work-Study in Museum Studies and**   3 ch (3L)
                              Material Culture Analysis (O)

Allows students to receive university credit for experience gained in museum studies, collections management and/or material culture analysis gained outside the university setting. *Prerequisite*: 3 ch of Archaeology. Registration: Students may register only after making arrangements for supervision and grading with the department.

ANTH3342   **Archaeological Lab School I (O)**   3 ch (3S) (LE) [W]

The lab school offers an introduction to archaeological analytical techniques through participation in a lab-based research project. This section emphasizes systematic approaches to research, recognition and cataloguing of archaeological materials, and basic data recovery. *Prerequisite:* 3 ch of 3000-level archaeology and permission of the instructor. Offered concurrently with ANTH 3343.

ANTH3343   **Archaeological Lab School II (O)**   3 ch (3L) (LE) [W]

The lab school offers an introduction to archaeological analytical techniques through participation in a lab-based research project. This section emphasizes quantitative methods, data manipulation and presentation, and technical analysis. *Prerequisites:* 3 ch of 3000-level archaeology and permission of the instructor. Offered concurrently with ANTH 3342.

ANTH3344   **Ancient Technology (O)**   3 ch (3L) (LE)

This course explores ancient technologies from the view of experimental archaeology and replication of specific tools. Various materials, such as stone, clay, metal and cloth are examined, and particular tool classes, such as weapons, containers, and transport vessels are considered.

ANTH3345 Acquiring an Archaeological Perspective (O) 3 ch (3S) (LE) [W]

This seminar examines the domain and nature of archaeological inquiry, and the relationships among archaeology and other disciplines in the social, physical and natural sciences. *Prerequisites:* 3 ch of third-level archaeology and permission of the instructor.

ANTH3346   **Public Archaeology (A)**   3 ch (3S) (LE)

This course offers an introduction to public and community-based archaeology and provides an overview of archaeology as public outreach. Topics include public engagement and education, the role of museums, universities, and field projects, and the ethical issues around public education focused on excavation. Students participate in the development and implementation of a public archaeology project, including creating a display or showcase on archaeological practices. The course also involves interacting with the public, with other students, and with the university community, and involves mentoring and teaching others about archaeological practice. *Prerequisites:* ANTH 1002 (or equivalent), ANTH 2303, or permission of instructor.

ANTH3351 Work-Study in Archaeological Field Research (O)   3 ch (3L)

Allows students to receive university credit for experience gained in archaeological field research outside the university setting. *Prerequisite*: 3 ch of archaeology. *Registration*: Students may register only after making arrangements for supervision and grading with the department.

ANTH3352   **Archaeological Field School (O)**   3 ch (3S) (LE) [W]

The field school offers an introduction to archaeological field techniques through participation in a field research project. This section emphasizes safety in the field, systematic approaches to research, site survey, recording, testing and excavation techniques. *Prerequisites:* 3 ch of 3000-level archaeology and permission of the instructor. Offered concurrently with ANTH 3353.

ANTH3353   **Archaeological Field School II (O)**   3 ch (3L) LE

The field school offers an introduction to archaeological field techniques through participation in a field research project. This section emphasizes recognition and recovery of archaeological materials, recording of basic field procedures and recovery of materials for technical analyses. *Prerequisite*: 3 ch of 3000-level archaeology and permission of the instructor. Offered concurrently with ANTH 3352.

ANTH3364   **Archaeology of Northeastern**   3 ch (Online) LE
                              North America

This course considers the archaeology of New England and Atlantic Canada from the region's first peopling to the period of early European contact. This course is divided into eleven short modules designed as building blocks of regional prehistory. Each module will have at its core a series of short readings and lectures. Topics covered might include, Contemporary First Nations Communities in the Northeast, Environmental context, The Paleoindian period and the peopling of the Northeast, Early and Middle Archaic, Late Archaic, Terminal Archaic and Early Woodland, Paleoeskimos in Newfoundland, Middle Maritime Woodland and Ancestral Beothuk, Late Maritime Woodland, European contact, and the Historical archaeology in the Northeast.

ANTH3365   **Intro to Archaeological GIS**   3 ch (online only)

Introduces the use of Geographic Information Systems with a special focus of the use of GIS in social sciences. Students learn how to create and analyze archeological spatial data and become familiar with the use of Esri's ArcGIS spatial software suite. *Prerequisite:* ANTH 1002 (or equivalent or permission of the instructor).

ANTH3502   **Medical Anthropology and Public Health**   3 ch (3C) [W]

Medical anthropology is playing an increasingly important role in public health. This course builds on basic concepts introduced in ANTH 2504 with an emphasis on the contributions of medical anthropological theories and concepts towards an understanding of complex health-related behaviour. This course examines why public health policies and interventions are more likely to be effective if the beliefs and behaviour of people are understood and taken into account. Some examples of particular health problems are examined, such as HIV/AIDS, cancer, cardiovascular diseases, diabetes, malaria and other communicable and non-communicable diseases to show how an anthropological approach can contribute to both a better understanding of health and illness and to more culturally appropriate public health measures. *Prerequisite:* ANTH 2504 or permission of the instructor.

ANTH3521   **Exploring the World of Primates (O)**   3 ch (2C 1L) [W]

In this course students are introduced to the major primate taxa (i.e. prosimians, New World monkeys, Old World Monkeys, and apes) to illustrate the great variety in the anatomy, physiology, behaviour, and

ecology within the Primate Order. The biological and social adaptations of primates are explored as well as basic evolutionary concepts, current trends and theories in primatology. The following topics are addressed: evolutionary history, taxonomic classification, diet, predation, communication, social systems, kin selection, reproductive strategies, cognition, and conservation. *Prerequisite:* ANTH 1002 or permission of the instructor.

ANTH3522 **Human Variation and Adaptation** **3 ch (2C 1L) [W]**

This course explores our biocultural evolution. It introduces students to human biological diversity, our similarities and differences and why these exist. How did humans in different parts of the world adapt and survive in their specific environments? What selective pressures were exerted on population genetics to produce modern variations? Topics include human adaptations: micro- and macro-evolution, skin pigmentation, growth and development, demography, aging and senescence, genetic variations, disease prevention and susceptibility. *Prerequisite:* ANTH 2505 or permission of the instructor.

ANTH3523 **Forensic Anthropology (A)** **3 ch (1.5C 1.5L) [W]**

This course introduces the field of forensic anthropology, which involves the application of biological anthropology methods to a medico-legal context. To identify human remains, forensic anthropologists assist law enforcement by determining age, sex, ancestry, stature, and unique features from skeletal remains. Using decomposition rates, they can provide an estimate of the postmortem interval. Course topics include: establishing a forensic context, methods of scene recovery, estimating the postmortem interval, reconstruction of demographic information, and identification of bone pathology and trauma.

ANTH3524 **Paleopathology (O)** **3 ch (2S 1L) [W]**

This course focuses on the study of ancient human diseases and their origins through examination of their remains in the archaeological record. Only a few diseases leave their marks on bone and tooth enamel, the most common remnants of ancient populations. Students are taught how to identify these abnormalities and assess their potential implications for the health of a living person/population, and to interpret the bioarchaeological evidence to gain insight into the health of past populations. *Prerequisite:* ANTH 3525 or permission of the instructor.

ANTH3525 **Human Osteology** **3 ch (1C 2L)**

Human skeletal anatomy and biology are fundamental to the study of forensics and biological anthropology. This course emphasizes a hands-on learning process for the identification of individual bones, and their morphological features, siding, and anatomical orientation. Relevant techniques for the reconstruction of past populations and the assessment of human biological variation are introduced (age at death, sex, growth and development).

ANTH3526 **Anthropology of Death** **3 ch**

What is death? All living things experience death, but humans are unique as we purposefully bury our dead, often with ceremony or ritual. Why is there so much variation when it comes to the dead and how they are treated, celebrated, or feared? An anthropological perspective is used to explore these questions, to understand specifically how we define death biologically and culturally and how this definition can and does change over time. *Prerequisite:* Any 1000-level Anthropology course or permission of the instructor.

ANTH 3552 **Bioarchaeology Field School** **3 ch [W]**

This field program, with ANTH 3553, offers an introduction to mortuary archaeology and bioarchaeological field methods through skeletal excavation. This section of the course emphasizes ethics when handling human remains, safety in the field, bioarchaeological recording, and data collection methods and skeletal excavation techniques. *Prerequisites*: ANTH 3525 (or equivalent) and permission of the instructor.

ANTH3662 **Canada's First Nations (A)** **3 ch (3C) [W]**

Explores the distinctiveness of Canada's Aboriginal peoples through their varied societies and cultures and how these have withstood centuries of colonial impact to confront the many shared challenges of living in contemporary Canadian society.

ANTH3694 **Latin America and the Caribbean** **3 ch (3C) [W]**

Relates specific ethnographic studies of Latin American and Caribbean societies to the analysis of colonialism, imperialism and underdevelopment.

ANTH3704 **South Asia** **3 ch (3C) [W]**

Introduces basic concepts for the analysis of South Asian society, including class, caste, ethnic groups, local and national state and economic relations, in an historical context of colonialism and underdevelopment. Debates surrounding these issues are addressed.

ANTH3801 **Food Studies (Cross-Listed: SOCI 3801)** **3 ch**

This course provides students with a general understanding of the role of food in contemporary societies by exploring the socio-cultural aspects of food production and consumption in a cross-cultural context. It also analyzes the economic and political landscape of farming in an international context by examining food politics concerning regulatory measures in food labelling and safety, genetically modified food, organic and sustainable agriculture, and the future of the world food system. **NOTE:** Credit can be obtained for only *one* of ANTH 3801 and SOCI 3801.

ANTH4024 **Anthropology and Ethics (O)** **3 ch (3S) [W]**

The ethical codes of many national anthropological associations recommend that teachers impress upon students the ethical challenges involved in every phase of anthropological work, as well as encouraging them to reflect upon available ethical codes. They also encourage dialogue with colleagues on ethical issues. This seminar provides a forum for extended discussions of complex ethical challenges that face anthropologists in their professional work. *Prerequisite*: Any introductory anthropology course or permission of the instructor.

ANTH4025 **Hunters and Gatherers (A)** **3 ch (3S) (LE) [W]**

Although relatively few hunter-gatherers exist today, hunting and gathering was the sole lifeway worldwide for the vast majority of human history. This course will consider hunter-gatherer groups from an anthropological and archaeological perspective. Topics to be covered include portrayals of hunter-gatherers, the validity of hunter-gatherer as an anthropological category, variation in foraging strategies, cosmology, architecture, gender, and band-level political organization. *Prerequisite:* Any 1000-level Anthropology course or permission of the instructor. Students who receive credit for ANTH 4307 cannot receive credit for ANTH 4025.

ANTH4090 to 4099 **Selected Topics in Anthropology (O)** **3 ch (3S) [W]**

These courses offer an in-depth analysis of a particular topic, selected by the instructor, from one (or more) of a socio-cultural, archaeological, biological, or medical anthropology perspective. *Prerequisite:* Any 2000-level Anthropology course or permission of the instructor.

ANTH4101 **Contemporary Debates in Socio-Cultural Anthropology (O)** **3 ch (3S) [W]**

Examines contemporary cutting-edge perspectives and debates in socio-cultural anthropology, chosen by the instructor. *Prerequisite:* Any 2000 or 3000-level Anthropology course or permission of the instructor.

ANTH4114 **Culture and Environment** **3 ch (3S) [W]**

Examines how culture mediates the relationship between humans and their environment, including traditional ecological knowledge and/or local knowledge systems. *Prerequisite:* ANTH 3117 or permission of the instructor.

ANTH4204 **Gender, Kinship, and Marriage (O)** **3 ch (3S) [W]**

Examines the wide diversity of gender roles, kinship forms and marital arrangements in human cultures of all scales. *Prerequisite:* ANTH 3114 or permission of the instructor.

ANTH4224 **Religion in Practice (A)** **3 ch [W]**

Explains the cultural and social roots of religious beliefs as well as the diversity of religious understandings and practices throughout the world. *Prerequisite:* ANTH 3116 or permission of the instructor.

ANTH4244 **Ethnopolitics and Identity (O)** **3 ch 3S [W]**

Identity is often as much as about politics as it is about cultural heritage. Current and classic examples of the politicization of cultural heritage and ethnic identity are explored in light of political action. *Prerequisite:* ANTH 2101 or permission of the instructor.

ANTH4302 **Historical Archaeology of the Maritimes** **3 ch (3C)**

Historical archaeology is the archaeological study of people who are accounted for in written records. The frameworks of Historical Archaeology are used to explore the archaeological record of the Maritime Provinces, from about AD 1500 to 1900.

ANTH4304 **Archaeology of Atlantic Canada (A)** **3 ch (3S) (LE) [W]**

In this seminar, students examine the 11,000 years of prehistory in the Atlantic region, emphasizing changes in material culture, ecological adaptations, and social interaction. *Prerequisite:* ANTH 3303 or permission of the instructor.

ANTH4308 **Consulting Archaeology** **3 ch (3S) (LE) [W]**

These courses provide an in-depth examination of an archaeological topic selected by the instructor. Examples of topics that may be selected include: geoarchaeology, prehistoric human ecology, hunter-gatherer

studies, consulting archaeology, or diet & subsistence. *Prerequisite:* ANTH 3303 or permission of the instructor.

ANTH4313   Archaeology, Heritage, and Public(s)   3 ch (O) [W]

How do communities and various publics produce, interact with, construct, and contest knowledge about the past? Perspectives from archaeology and critical studies of heritage are used to examine processes of knowledge creation, dissemination, mobilization, and transfer in archaeology, as well as the role of research modes in knowledge production (including applied research, conventional problem-oriented research, community-engaged research, and collaborative research). Topics will include discussion of critical heritage studies, citizen science, indigenous archaeology, post-normal science, and applied research such as cultural resrouce management. *Prerequisite:* Any 1000-level Anthropology course or permission of the instructor.

ANTH4502   Issues in Medical Anthropology (A)   3 ch (3S) [W]

A course designed to evaluate the application of medical anthropology in understanding and improving human health problems. A selection of case studies reflecting the various dimensions of medical anthropology in different cultural contexts are considered. The course begins with an introduction to the research methods used in medical anthropology. The important theoretical constructs that have influenced the field of medical anthropology and their application in research problems are examined. *Prerequisite:* ANTH 2504 or permission of the instructor.

ANTH4522   Human Evolution (O)   3 ch (3L) [W]

Examines the genetic basis of human evolution. With the advent of modern genetic technologies, it has been possible to compare and contrast evolutionary relationships at the genetic level. One current debate in biological anthropology surrounds the origin of anatomically modern Homo sapiens based on DNA evidence. Fossil evidence along with the genetic picture are considered in detail. *Prerequisite:* ANTH 1002 (or equivalent) or permission of the instructor.

ANTH4523   Forensic Analysis of Human Teeth (O)   3 ch (2C 1L) [W]

This course provides students with a detailed introduction to the methodology used in the study of human teeth in forensics, biological anthropology, and archaeology. Students are taught how to use teeth in establishing a biological profile for human remains using anatomical aspects of human dentition as well as morphological variation, pathology, and changes with age and development. Topics selected for study represent areas of current research that address important questions in the study of forensic identification, human biological variation, bioarchaeology, and human origins. *Prerequisite:* ANTH 2505 or permission of the instructor.

ANTH4524   Bioarchaeology (O)   3 ch (3S) [W]

In this course students are introduced to advanced topics in the discipline of bioarchaeology, the application of biological anthropological techniques to reconstruct the lives of past populations from an archaeological context using their skeletal remains. Specific topics include patterns of subsistence, diet, disease, demography, and physical activity. *Prerequisite:* ANTH 3525 or permission of the instructor.

ANTH4602   Genes and People: 3 ch (3L) [W]
**   Anthropological Applications (O)**

This course introduces the basic concepts of human genetics and examines its application in anthropological research. Topics covered include: human genetic variability and its role in disease prevention and susceptibility; the use of DNA in reconstructing the biological profile of human remains from forensic contexts; and using ancient DNA to trace population migrations and resolve issues of human origins. Ethical questions and implications pertaining to the human genome project and human genetic research are also addressed.

ANTH4702   Gender and Health (A)   3 ch (3S) [W]

A course designed to evaluate the gender dimension of health and disease, and addresses the articulation of gender roles and ideology with health status, the organization of health care, and health policy in a cross-cultural perspective. Gender is a cultural construct, and cultural ideas about women's health and women's bodies differ between social groups and historical periods. Gender issues pertain to men as well, and male gender roles and expectations are also culturally constructed. There are biomedical consequences to the cultural constructions of gender differences. The course examines how expressions of gender and power can play a role in prevention and treatment strategies. *Prerequisite:* ANTH 2504 or permission of the instructor.

ANTH5001   Anthropology Honours Seminar   3 ch (3S) [W]

Students explore the research process through conducting an individual research project in anthropology, developed in connection with the instructor. In addition, students engage in professional development and

experiential opportunities. *Prerequisites:* Open only to Anthropology Honours or qualifying students, or with permission of the instructor.

APPLIED SCIENCE

See beginning of Section H for abbreviations, course numbers and coding.

APSC2023   A Survey of 19th and 20th Century Physics   3 ch (3C)

An introduction to ideas developed in Physics over the last two centuries. Topics will be drawn from Thermodynamics, Geometric and Physical Optics, Relativity, Quantum Mechanics and Atomic Physics. *Prerequisites:* PHYS 1081 or equivalent, MATH 1013 or MATH 1063.

APSC2028 Survey of 19th and 20th Century Physics Laboratory 2 ch (3L)

A series of laboratory exercises illustrating the ideas central to the development of Physics over the last two centuries. *Co-requisite:* APSC 2023.

APSC3953   Basis of Biomedical Engineering   3 ch

This course introduces the general aspects of Biomedical Engineering, which is the application of engineering principles to study biology, medicine, behaviour and health. A number of areas are covered by this broad topic, including anatomy, muscle physiology, biomedical instrumentation, biomechanics, and prosthetics. It will also introduce students to the idea of Biomedical Engineering as a career choice. *Prerequisites:* EE 1813, 80 ch in an engineering program, plus ENGG 1082 or CE 1023 or permission of the instructor.

ARABIC

See beginning of Section H for abbreviations, course numbers and coding.

ARAB1013   Introductory Arabic I   3 ch (3C)

An introductory course to develop a basic knowledge of and foundation in standard Arabic writing and sound systems. Identify and produce Arabic sounds, write Arabic letters in various positions. To achieve basic proficiency in speaking, reading, writing and understanding the language. Read and comprehend simple Arabic texts, participate in simple conversations and discussions. To learn some basic aspects of Arab culture and civilization. Not open to native speakers. No *Prerequisites*.

ARAB1023   Introductory Arabic II   3 ch (3C)

A continuation of ARAB 1013. Not open to native speakers. *Prerequisite:* ARAB 1013.

ARTS

See beginning of Section H for abbreviations, course numbers and coding.

ARTS1000   Development of Western Thought   6 ch

This course explores the significant concepts that have shaped the development of Western civilization from the time of Ancient Greece to the present day. Registration for this course is limited to students in the BA degree program. **NOTE:** Students can obtain credit for only one of ARTS 1000, ARTS 1100, or the ARTS 1001/1002 combination.

ARTS1001   Development of "Western" Thought: Part 1   3 ch (2C 1T) [W]

Explores significant ideas that have helped to shape our world. Beginning with ancient texts and concluding with the era of the Renaissance, it considers the concepts of diverse thinkers and the value systems of different societies and the interactions between them. Registration for this course is limited to students in the BA, BAA, BAS, BA/BCS, BA/BSc programs. **NOTE:** Students can obtain credit for only one of ARTS 1000, ARTS 1001, or ARTS 1100.

ARTS1002   Development of "Western" Thought: Part 2   3 ch (2C 1T) [W]

Explores significant ideas that have helped shape our world. Beginning with the era of colonial expansion and continuing into the contemporary era, it considers the concepts of diverse thinkers and the value systems of different societies and the interactions between them. Registration for this course is limited to students in the BA, BAA, BAS, BA/BCS, BA/BSc programs. **NOTE:** Students can obtain credit for only one of ARTS 1000, ARTS 1002, or ARTS 1100.

ARTS1003   Arts Lab: Essential Skills   3 ch (1.5C 1.5L) [W]

Addresses the specific skills which first-year Arts students need, including a sense of purpose and belonging; reading, writing, research, and study skills; and an understanding of the nature of Arts education. Includes one lecture and one lab per week. Labs will include guided planning, writing, research, and study sessions. **NOTE:** Students who have completed ARTS 1100 cannot obtain credit for ARTS 1003. *Co-requisite:* ARTS 1001.

ARTS1100 **Development of Western Thought** **9 ch (2L 2T) [W]**
                (for Academic Success)

This course shares lectures, academic content, and format with ARTS 1000, exploring the significant concepts that have shaped the development of Western civilization from the ancient world to the present day. ARTS 1100 students participate in an additional tutorial per week (beyond the usual one per week for ARTS 1000) in which critical reading and thinking and effective writing skills are strengthened through the use of small learning communities. Students work closely with tutorial leaders and peers to develop the skills necessary for further study and academic success in Arts. **NOTE:** Students can obtain credit for only one of ARTS 1000, ARTS 1100, or the ARTS 1001/1002 combination.

ARTS3000 **Faculty of Arts Internship** **6 ch (LE)**

This two-term internship combines formal education with service in the larger community by providing work experience useful for the career and professional profile of individual students as well as bringing the skills and talents of Arts students to community organizations. Students are registered following a meeting with the Director of the Internship Program. Limited enrolment. Open only to students in the Faculty of Arts. Students taking ARTS 3000 cannot take ARTS 3001 or 3002.

ARTS3001 **Faculty of Arts Internship** **3 ch (LE)**

This one-term internship combines formal education with service in the larger community by providing work experience useful for the career and professional profile of individual students as well as bringing the skills and talents of Arts students to community organizations. Students are registered following a meeting with the Director of the Internship Program. Limited enrolment. Open only to students in the Faculty of Arts. Students cannot take both Arts 3001 and ARTS 3000.

ARTS3002 **Faculty of Arts Internship** **3 ch (LE)**

This one-term internship combines formal education with service in the larger community by providing work experience useful for the career and professional profile of individual students as well as bringing the skills and talents of Arts students to community organizations. Students are registered following a meeting with the Director of the Internship Program. Limited enrolment. Open only to students in the Faculty of Arts. Students cannot take both ARTS 3002 and ARTS 3000.

ARTS4000 **Advanced Arts Internship** **6 ch (LE)**

Links critical reflections with experiential learning in the community to provide work experience for upper level students in the Faculty of Arts. Students enhance their professional profile and gain career experience while providing their skills and talents to community groups, local agencies, service organizations, non-governmental organizations, or businesses. ARTS 4000 Advanced Arts Internships may include a payment, stipend or salary. *Prerequisite:* Students must have completed 3 ch of experiential learning or equivalent professional experience in order to take this course. Enrolment is limited. Students must have advanced academic standing to register. Enrolment is subject to approval.

ASTRONOMY

NOTE: See beginning of Section H for abbreviations, course numbers and coding.
The following course covers basic astronomy. No university level mathematics or physics is required but high school math and science courses are an asset.

ASTR1023 **Understanding the Night Sky** **3 ch**

Intended for all those who are curious about the night sky. We will go beyond naming things. We will discuss the nature of what's out there and how we know what we know about what's out there. Some observing sessions will be included, weather permitting. A high school science background is not required. Physics honours, majors and minors cannot count this course as a Physics credit, only as a non-Physics elective. Credit cannot be obtained for both ASTR 1023 and ASTR 1033.

ASTR1033 **Astronomy (A)** **3 ch (3C)**

Role within programme and connections to other courses. Just what and how do we know about our universe and all the stuff it contains? Knowledge of mechanics is used and further topics in classical and quantum physics are introduced as needed. Astronomy is a wonderful example how a variety of pieces of physics knowledge can be brought together to understand an aspect of the universe. *Content.* Begins with basic phenomena accessible to all, such as the apparent motions of the Sun and stars, then discusses planetary systems, stars, and galaxies, and touches on topics concerning the universe as a whole (cosmology). ASTR 1033 can count toward a physics minor. Physics honours and majors can count this course as a Physics credit. Credit cannot be obtained for both ASTR 1023 and ASTR 1033. *Prerequisites:* Grade 12 physics or PHYS 1051 or PHYS 1081 or equivalent.

BIOLOGY

Students should note that in the Science Faculty the minimum acceptable grade in a course that is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year. **NOTE**: See beginning of Section H for abbreviations, course numbers and coding.

BIOL1001 **Biological Principles, Part I** **3 ch (3C)**

Surveys principles of biology from the molecular level to the cell. Topics include an introduction to the structure, function and synthesis of biological molecules, major cellular structures and processes such as proliferation, energy capture and metabolism, and reproduction and heredity. Examples are presented from both eukaryotic and prokaryotic cells. Students intending to major in Biology must also take BIOL 1006. Credit will not be given for both BIOL 1001 and BIOL 1009.

BIOL1006 **Applications in Biology, Part I** **2 ch (3L) [W]**

Instruction and laboratory work dealing with applications of Biology at the level of biological molecules and the cell. *Pre- or Co-requisite:* BIOL 1001 or BIOL 1009.

BIOL1009 **Biological Principles, Part I – Online** **3 ch (3C)**

This course is the online version of BIOL 1001. Students must first take BIOL 1001, or have permission of the BIOL 1001 instructor. The course surveys principles of biology from the molecular level to the cell. Topics include an introduction to the structure, function and synthesis of biological molecules, major cellular structures and processes such as proliferation, energy capture and metabolism, and reproduction and heredity. Examples are presented from both eukaryotic and prokaryotic cells. **NOTE**: This course is designed for science students. Students intending to major in Biology must also take BIOL 1006. Credit will not be given for both BIOL 1001 and BIOL 1009.

BIOL1012 **Biological Principles, Part II** **3 ch (3C)**

Evolution provides the theoretical framework within which biologists work. Through a quantitative lens, this course 1) discusses the mechanisms of evolution and speciation; 2) surveys the biological diversity that results from these processes; and 3) describes a variety of metabolic, behavioural, and ecological processes that relate to survival and reproduction. **NOTE**: Students intending to major in Biology must also take BIOL 1017. Credit will not be given for both BIOL 1012 and BIOL 1019. *Prerequisite:* BIOL 1001 or BIOL 1009.

BIOL1017 **Applications in Biology, Part II** **2 ch (3L) [W]**

Instruction and laboratory work dealing with applications of Biology at the level of organisms and their ecological interactions. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006. *Pre- or Co-requisite:* BIOL 1012 or BIOL 1019.

BIOL1019 **Biological Principles, Part II – Online** **3 ch (3C)**

This course is the online version of BIOL 1012. Students must first take BIOL 1012, or have permission of the BIOL 1012 instructor. Evolution provides the theoretical framework within which biologists work. Through a quantitative lens, this course 1) discusses the mechanisms of evolution and speculation; 2) surveys the biological diversity the results from these processes; and 3) describes a variety of metabolic, behavioural, and ecological processes that relate to survival and reproduction. **NOTE**: Students intending to major in Biology must also take BIOL 1017. Credit will not be given for both BIOL 1012 and BIOL 1019. *Prerequisite:* BIOL 1001 or BIOL 1009.

BIOL1621 **Topics in Biology I: Life on a Changing Planet** **3 ch (3C)**

This course will introduce students to the biodiversity, ecology, and evolution of life on Earth through exploration of the ever-changing nature of Earth's ecosystems. We will address topics such as major groups of plants and animals through the history of life; responses of individual organisms, populations, and species to changing environments; climate change in past, present and future; and human impacts on the biosphere. **NOTE**: This course is not equivalent to BIOL 1001/ BIOL 1009 or BIOL 1012/ BIOL 1019, and is restricted to students who have not received prior credit for BIOL 1001, BIOL 1009, BIOL 1012, or BIOL 1019.

BIOL1622 **Topics in Biology II: Life on a Small Scale** **3 ch (3C)**

This course will introduce students to biological concepts that apply to everyday life. Topics will be chosen to help students understand the molecular interactions that are essential for life, the cellular processes that are required for survival and reproduction, and the importance of these to human health, industry, and the environment. NOTE: This course is not

445

equivalent to BIOL 1001/ BIOL 1009 or BIOL 1012/ BIOL 1019, and is restricted to students who have not received prior credit for BIOL 1001, BIOL 1009, BIOL 1012, or BIOL 1019. Credit will not be given for both BIOL 1622 and BIOL 1629.

BIOL1629   Topics in Biology II: Life on a Small Scale - Online   3 ch (3C)

This course will introduce students to biological concepts that apply to everyday life. Topics will be chosen to help students understand the molecular interactions that are essential for life, the cellular processes that are required for survival and reproduction, and the importance of these to human health, industry, and the environment. **NOTE**: Not equivalent to BIOL 1001/ BIOL 1009 or BIOL 1012/ BIOL 1019, and is restricted to students who have not received prior credit for BIOL 1001, BIOL 1009, BIOL 1012, or BIOL 1019. Credit will not be given for both BIOL 1622 and BIOL 1629.

BIOL1711   Human Anatomy I   4 ch (3C 2L) (LE)

This course is a general study of human anatomy which will include the following systems: integumentary, skeletal, muscular, nervous (including eye and ear), cardiovascular, lymphatic, urinary, digestive, respiratory, and reproductive. Limited enrolment; priority given to students in Kinesiology, Nursing and Biology-Chemistry (Pre-Health Professions stream). Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. *Co-requisite*: BIOL 1001 or BIOL 1009 or permission of the instructor. Credit will not be given for both BIOL 1711 and BIOL 1719.

BIOL1719   Human Anatomy I - Online   4 ch (C/L)

This course is the online version of BIOL 1711. Kinesiology students must first take BIOL 1711. BIOL 1719 is available to students prior to enrolment in Nursing, and current Nursing and Kinesiology students with permission of the instructor. This course is also available to other students (e.g. from Science) as an elective. The course is a general study of human anatomy which will include the following systems: integumentary, skeletal, muscular, nervous (including eye and ear), cardiovascular, lymphatic, urinary, digestive, respiratory, and reproductive. *Co- or Prerequisite:* BIOL 1001 or BIOL 1009 or permission of the instructor. Credit will not be given for both BIOL 1711 and BIOL 1719.

BIOL1782   Human Physiology I   4 ch (3C 2L)

An introduction to the various systems that comprise the human body. Emphasis will be on integration of these systems for maintenance of homeostasis. Limited enrolment; priority given to Nursing and Kinesiology students. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. *Prerequisite:* BIOL 1711 or BIOL 1719. Credit will not be given for both BIOL 1782 and BIOL 1789.

BIOL1789   Human Physiology I – Online   4 ch (C/L)

This course is the online version of BIOL 1782. Kinesiology students must first take BIOL 1782. BIOL 1789 is available to students prior to enrolment in Nursing, and current Nursing and Kinesiology students with permission of the instructor. This course is also available to other students (e.g., from Science) as an elective. The course is an introduction to the various systems that comprise the human body. Emphasis will be on integration of these systems for maintenance of homeostasis. *Prerequisite:* BIOL 1711 or BIOL 1719. Credit will not be given for both BIOL 1782 and BIOL 1789.

BIOL1846   New Brunswick Plants and Their Habitats   4 ch (C/L)

An intensive seven day course, normally offered in the summer semester, exploring the floristic diversity of New Brunswick concentrating on the southern region. There will be an emphasis on plant identification and an introduction to botanical classification. The program for each day consists of morning lectures and lab work, afternoons in the field, and evenings with more lectures and lab work. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective.

BIOL2003   Introduction to Ecology   3 ch (3C)

Ecology is the study of organisms and their interactions with the environment. We begin by introducing the physical environment as a template for evolved structures, processes, traits, and systems. The discussion then moves to adaptations of evolved systems across scales from photo/chemosynthesis to individual organisms to populations to communities to ecosystems, and emphasizing energy flow and nutrient cycling. An overall theme is the effects of human activities on ecosystem structures and functions. Students are introduced to statistics for ecology. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012, or BIOL 1019, BIOL 1017. *Co-requisite*: BIOL 2008 or equivalent.

BIOL2008   Laboratory in Ecology   3 ch (1C 3L) [W]

This course is a companion course to BIOL 2003. In this course, students use laboratory experiments to investigate core concepts in energy and nutrient acquisition by terrestrial and aquatic organisms. *Prerequisites:*

BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite*: BIOL 2003.

BIOL2013   Evolutionary Genetics   3 ch (3C)

The overarching goal of this course is to provide students with an understanding of the genetic basis for evolutionary change, integrating molecular and population scales. Major topics include classical genetics, evolutionary theory, phylogenetics, population genetics, and quantitative genetics. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite:* BIOL 2018.

BIOL2018   Laboratory in Evolutionary Genetics   3 ch (1C 3L)

This course is a companion course to BIOL 2013. In this course, students use laboratory experiments and computer simulations and analyses to investigate core concepts in evolutionary genetics. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite*: BIOL 2013.

BIOL2023   Introductory Biochemistry   3 ch (3C)

An overview of the processes required for life from biochemical, molecular, genetic and cellular perspectives. Major topics will include the structure and function of biological macromolecules, and the pathways and mechanisms of gene expression, enzymes, and cell signalling. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017; CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, or CHEM 1001, CHEM 1006, CHEM 1982, CHEM 1987. *Co-requisites*: BIOL 2028. *Pre- or Co-requisite:* CHEM 2401 or CHEM 2421 or permission of the instructor. Chemistry (Majors and Honours) students and Chemical Engineering students are not required to have taken BIOL 1006 and BIOL 1017.

BIOL2028   Laboratory in Biochemistry   3 ch (1C 3L)

This course teaches experimental techniques used to investigate processes required for life from biochemical, molecular, genetic and cellular perspectives. Topics will include the quantitative analysis of biological macromolecules, gene expression, enzyme kinetics, and cell signaling. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017; CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, or CHEM 1001, CHEM 1006, CHEM 1982, CHEM 1987. *Co-requisites*: BIOL 2023. *Pre- or Co-requisite:* CHEM 2401 or 2421 or permission of the instructor. Chemistry (Majors and Honours) students and Chemical Engineering students are not required to have taken BIOL 1006 and BIOL 1017.

BIOL2053   Introductory Genetics   3 ch (3C 1T)

Basic concepts of classical genetics including Mendelian genetics, gene interactions, sex linkage, linkage mapping and recombination, complementation are introduced. These are integrated with current topics including gene and chromosome structure and function, mutation, gene expression, transposable elements, extra nuclear genetics, quantitative and population genetics. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017.

BIOL2063   Biological Diversity   3 ch (3C)

Biological diversity, life on planet Earth, is an interconnected continuum in time and space. All life is connected through genetic ancestry, but also through interactions in and with changing environments. The course provides students with a well-rounded understanding of biological diversity, including the concepts of and tools to study biological diversity, the innovations underlying the large biological diversity on our planet, a broad overview of biological diversity on our planet in the past and present, and importance of biological diversity to humans and the biosphere we inhabit. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite*: BIOL 2068.

BIOL2068   Laboratory in Biological Diversity   3 ch (1C 3L)

This course is a companion course to BIOL 2063. It provides training in generating and interpreting phylogenetic trees; provides exposure to molecular and morphological data (in extant and extinct organisms) to identify organisms and test hypotheses about their relationships; provides exposure to a variety of different organisms to explore key innovations that have led to changes in biological diversity; and teaches techniques to study organisms and biological diversity (computer software, binomial keys, microscopy, dissection, comparative observation, and sampling and collecting). *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite*: BIOL 2063.

BIOL2103   Evolution   3 ch (3C)

An introduction to evolutionary theory explaining biological unity and diversity, from pre-Darwinian ideas to current issues in evolutionary biology. Theoretical and empirical studies are integrated to elucidate evolutionary processes and outcomes. Upon course completion, students will be able to summarize the evidence supporting evolutionary theory and its historical development, describe mechanisms of evolutionary change

above and below the species level, and explain the evolution of common life histories and behaviours. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017. *Co-requisite:* BIOL 2053.

BIOL2251   **Clinical Microbiology**   **3 ch (3C)**

This course (i) covers aspects of the biology of microorganisms from a clinical perspective, (ii) provides an introduction to the fundamental concepts of infectious disease microbiology, and (iii) discusses microbial diseases affecting the skin, nervous system, cardiovascular system, respiratory system, digestive system, and urinary and reproductive systems. **NOTE**: This course is not equivalent to BIOL 3261, and is restricted to students who have not received prior credit for BIOL 3261. As well, Biology honours majors and minors cannot count this course as a Biology Credit, only as an elective. Credit will not be given for both BIOL 2251 and 2259

BIOL2259   **Clinical Microbiology - Online**   **3 ch (3C)**

This course is the online version of BIOL 2251. BIOL 2259 is available to current Nursing students with permission of the instructor. It (i) covers aspects of the biology of microorganisms from a clinical perspective, (ii) provides an introduction to the fundamental concepts of infectious disease microbiology, and (iii) discuss microbial diseases affecting the skin, nervous system, cardiovascular system, respiratory system, digestive system, and urinary and reproductive systems. **NOTE**: This course is not equivalent to BIOL 3261 and is restricted to students who have not received prior credit for BIOL 3261. As well, Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. Credit will not be given for both BIOL 2251 and 2259.

BIOL2289   **Work Term I**   **cr**

A written report on the scientific activities of the work term in a field of Biology as part of the Co-operative Education program in Science. Credit for the course is dependent in part on the employer's evaluation of the student's work. (Students must have a GPA of 2.7 or better for BIOL Co-op placement.)

BIOL2501   **Pathophysiology I**   **3 ch (3C) (LE)**

Introduces students to the study of the disruption of the normal balance of selected systems of the human body by disease and other perturbations. Limited enrolment. Nursing students and BMLS students have first priority; others need permission of the instructor. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. *Prerequisite:* BIOL 1782 or BIOL 1789. Credit will not be given for BIOL 2501 and BIOL 2509.

BIOL2509   **Pathophysiology I - Online**   **3 ch (3C)**

This course is the online version of BIOL 2501. BIOL 2509 is available to students prior to enrolment in Nursing, and current Nursing and BMLS students with permission of the instructor. This course is also available to other students (e.g., from Science) as an elective. The course introduces students to the study of the disruption of the normal balance of selected systems of the human body by disease and other perturbations. *Prerequisite:* BIOL 1782 or BIOL 1789. Credit will not be given for both BIOL 2501 and BIOL 2509.

BIOL2513   **Pathophysiology II**   **3 ch (3C) (LE)**

A continuation of BIOL 2501 with emphasis on perturbations to the normal functioning of organ systems. Limited enrollment. Nursing students and BMLS students have first priority; others need permission of the instructor. Biology majors and minors cannot count this course as a Biology Credit, only as an elective. *Prerequisite:* BIOL 2501 or BIOL 2509. Credit will not be given for both BIOL 2513 and BIOL 2519.

BIOL2519   **Pathophysiology II - Online**   **3 ch (3C)**

This course is the online version of BIOL 2513, and is a continuation of BIOL 2501 (or BIOL 2509) with emphasis on perturbations to the normal functioning of organ systems. BIOL 2519 is available to current Nursing and BMLS students with permission of the instructor. This course is also available to other students (e.g. from Science) as an elective. *Prerequisite:* BIOL 2501 or BIOL 2509. Credit will not be given for both BIOL 2513 and BIOL 2519.

BIOL2629   **Virtual Techniques in Molecular Biology**   **3 ch (3C)**

This online course teaches the theory and demonstrates the techniques used to investigate processes required for life from biochemical, molecular, genetic, and cellular perspectives. Topics will include the recombinant DNA technology, DNA analysis, gene expression, and protein analysis. **NOTE:** Not equivalent to BIOL 2028, and restricted to students who have not received prior credit for BIOL 2028. *Prerequisite:* one of BIOL 1001, BIOL 1009, BIOL 1622, BIOL 1629, or permission of the instructor.

BIOL2721   **Human Physiology II**   **4 ch (3C 2L) (LE)**

This course is a continuation of BIOL 1782/1789 with emphasis on metabolism, muscle and bone physiology, immune responses and healing. Limited enrolment; Kinesiology students have first priority. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. *Prerequisite:* BIOL 1782 or BIOL 1789.

BIOL2759   **Physiology and Pathophysiology for Licensed**   **3 ch (3C)**
                  Practical Nurses

This course will provide a detailed review of normal human physiology and then focus on the pathophysiological mechanisms underlying diseases in each organ system. This course is online and only open to students in the Licensed Practical Nurse to Bachelor of Nursing Pathway program. *Prerequisite:* Admission to the Licensed Practical Nurse to Bachelor of Nursing Pathway program.

BIOL2761   **Human Physiology - Metabolism**   **3 ch (3C)**

This is an introductory level course in human physiology. Selected topics covered include metabolism, muscle and bone physiology, the immune system, healing and homeostasis. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. Credit will be given for only one of BIOL 2761, BIOL 2769, or BIOL 2721. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006.

BIOL2769   **Human Physiology - Metabolism - Online**   **3 ch (3C)**

This course is the online version of BIOL 2761. Students must first take BIOL 2761, or have permission from the instructor. This is an introductory course in human physiology. Selected topics covered include metabolism, muscle and bone physiology, the immune system, healing and hometostasis. Biology honours, majors and minors cannot count this course as a Biology credit, only as an elective. Credit will be given for only one of BIOL 2769, BIOL 2761, or BIOL 2721. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006.

BIOL2792   **Human Physiology – Systems**   **3 ch (3C)**

This course will introduce students to the various systems that comprise the human body with emphasis on the integration of these systems for maintenance of homeostasis. The systems that will be covered in detail are the cardiovascular system, pulmonary system, renal system, endocrine system, gastro-intestinal system and the nervous system. Biology honours, majors and minors cannot count this course as a Biology Credit, only as an elective. Credit will be given for only one of BIOL 2792, BIOL 1782, or BIOL 1789.

BIOL3013   **Advanced Genetics (O)**   **3 ch (3C)**

The goal of this course is to develop knowledge about the concepts and process of genetic analysis and its applications in research, including concepts of experimental design, methodology, and interpretation of results. Using this perspective, we explore the experimental approaches used to identify and characterize the role of genes involved in biological processes and how these approaches are applied to specific examples from the research literature. *Prerequisites:* BIOL 2013 or BIOL 2053, BIOL 2023, or equivalent.

BIOL3033   **Cell Signalling (A)**   **3 ch (3C)**

Examines the principles of gene expression and cellular regulation. The perception of extra- and intracellular signals, intracellular signal transduction pathways and the control of cell function will be examined while emphasizing experimental approaches. *Prerequisite:* BIOL 2023. *Strongly Recommended:* BIOL 2013 or BIOL 2053.

BIOL3043   **Cell Biology**   **3 ch (3C)**

An examination of the structure and function of cells, focusing on the molecules and molecular mechanisms mediating the activities of membranes, cellular compartments, protein and vesicular transport and targeting, cytoskeletal construction and dynamics, the cell cycle, regulation of cell size, cell-cell and cell-matrix adhesion, cellular differentiation and the development of multicellular organisms. The course also focuses on how the knowledge in cellular biology was obtained, on the limits to our understanding, and on current advances. *Prerequisites:* BIOL 2013 or BIOL 2053, BIOL 2023. *Strongly recommended:* BIOL 2028.

BIOL3058   **Genetic Analysis Laboratory**   **4 ch (2C 3L) (LE)**

An exploration of gene inheritance, mutation, regulation of gene expression, and genetic interactions. The laboratories involve the use of model eukaryotic organisms to ask questions about physiology and development at the organismal, cellular and molecular levels. Limited enrolment. *Prerequisites:* BIOL 2023, BIOL 2028; and one of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103.

BIOL3073   **Biochemistry of Gene Expression**   **3 ch (3C)**

The structures and functions of all biological entities are dependent upon regulated gene expression. In this course, we will explore selected topics

447

in gene expression from a molecular genetic and biochemical perspective. Topics may include: genome and gene structure, the processes of transcription and translation in prokaryotes and eukaryotes, the structures and functions of RNA polymerase and the ribosome, the fine scale structures of gene promoters, and a detailed mechanistic examination of how gene expression is regulated in the cell. **NOTE:** Students will download and use a free molecular modelling program in the course; a laptop computer is strongly recommended. *Prerequisities:* BIOL 2013 or BIOL 2053, BIOL 2023, BIOL 2063. *Recommended*: BIOL 2028.

BIOL3083   **Botany**   **5 ch (3C 3L) (LE) [W]**

During the course of their lives, plants must perform all of the same functions as animals to survive: find a suitable place to live, acquire resources, find a mate, and defend themselves from enemies. However, plants are at an apparent disadvantage in comparison to most animals because they must perform all of these activities without the benefit of mobility. Yet, it is a green world and so this handicap is more apparent than real. This course explores the great diversity of plants, and examines their form in relation to function to understand how plants manage to meet the challenges faced by all organisms. Limited enrolment. *Prerequisites:* BIOL 2003, BIOL 2008, BIOL 2063, BIOL 2068.

BIOL3113   **Evolutionary Ecology (A)**   **5 ch (3C 3L)**

This lecture and lab-based course explores key ideas about ecological causes of evolutionary change. Topics will include natural and sexual selection, life histories, phenotypic plasticity, mating systems, evolutionary conflict, and co-evolution. *Prerequisites:* BIOL 2003, BIOL 2008; and one of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103.

BIOL3133   **Selected Topics in Biochemistry (O)**   **3 ch (3C)**

Principles of intermediate metabolism with particular reference to physical exercise and selected biomedical topics. *Prerequisite:* BIOL 2023. Recommended: BIOL 3043.

BIOL3149   **Independent Studies**   **3 ch (R) [W]**

Allows academically strong, highly motivated students to write a report on a subject of interest. The student should discuss the topic with the staff member best qualified to give approval of the subject matter and to give guidance during the year. Application is made to the Director of Undergraduate Studies (Biology Department).

BIOL3162   **Developmental Biology of Animals**   **3 ch (3C)**

An exploration of animal development from fertilization to death, with emphasis on the underlying cellular and molecular mechanisms. Students will gain an understanding of how the knowledge in development biology was obtained, and of gaps in knowledge and current research. *Prerequisites:* BIOL 2013 or BIOL 2053, BIOL 2023, BIOL 2063. Strongly recommended: BIOL 3043.

BIOL3173   **Marine Biology Field Course (O)**   **4 ch (C/L/T) (LE)**

Introduces the study of the seashore and coastal waters. Emphasizes nature and ecology of littoral flora and fauna and practical methods of study. Held at the Huntsman Marine Science Centre in St. Andrews, N.B. Twelve days in length, given immediately after spring examinations. A charge for accommodation is required. Enrolment limited, selection based on CGPA. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017, or equivalent.

BIOL3207   **Microbiology Laboratory**   **4 ch (1C 4L) [W]**

Biochemical, molecular and genetic methods are applied to the study of bacteria. Projects examine cell structure, function and physiological responses of bacteria. *Prerequisites:* BIOL 2023, BIOL 2028. *Recommended:* BIOL 2063, BIOL 2068, BIOL 3261.

BIOL3242   **Molecular Evolution**   **3 ch (3C)**

The course provides a synthesis of our understanding of evolution at the molecular level. It covers the dynamics of evolutionary change (i.e., rates and patterns), the driving forces behind the evolutionary process, the effects of various molecular mechanisms and processes on the structure and evolution of genes and genomes. *Prerequisites:* One of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; BIOL 2023.

BIOL3261   **Microbiology**   **3 ch (3C)**

Principles of prokaryotic, cell biology, including cell structures and their function, metabolism and growth, and regulation of cellular processes. Topics include the response of bacteria to environmental factors, bacterial-host interactions, and molecular and genomic tools to study microbiology. *Prerequisites:* BIOL 2013 or BIOL 2053, BIOL 2023, BIOL 2063, BIOL 2068.

BIOL3279   **Work Term II**   **Cr**

A written report on the scientific activities of the work term in a field of Biology as part of the Co-operative Education program in Science. Credit for the course is dependent in part on the employer's evaluation of the

student's work. (Students must have a GPA of 2.7 or better for BIOL Co-op placement.) *Prerequisite:* Work term I in a field of Science.

BIOL3289   **Work Term III**   **Cr**

A written report on the scientific activities of the work term in a field of Biology as part of the Co-operative Education Program in Science. Credit for the course is dependent in part on the employer's evaluation of the student's work. (Students must have a GPA 2.7 or better for BIOL Co-op placement.) *Prerequisite:* Work Term II in a field of Science.

BIOL3293   **Population Genetics**   **4 ch (3C 2L)**

An introduction to the branch of evolutionary biology concerned with the genetic structure of populations and how it changes through space and time. Topics will include the main evolutionary forces and their effects on patterns of phenotypic and molecular variation within and among populations, molecular markers and their applications in evolutionary and conservation biology, and an introduction to unifying concepts such as the genetics of speciation, molecular evolution, and population genomics. Laboratory sessions will emphasize the use of different computer packages for the analysis and interpretation of the data encountered in population genetics. *Prerequisites:* One of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; STAT 2264 or equivalent. *Recommended*: BIOL 2003.

BIOL3301   **Taxonomy of the Flowering Plants (O)**   **5 ch (3C 3L)**

Why it that the flowering plants are the most recently is evolved of all the major plant groups yet they are by far the most diverse and abundant? The diversity of flowering plants and their identification, description and classification will be emphasized in relation to the flora of New Brunswick and major flowering plant families of the world. *Prerequisites:* BIOL 2063, BIOL 2068.

BIOL3311   **Immunobiology**   **3 ch (3C)**

Production and function of the immunoglobulins, characteristics of immunogens, prevention of infectious disease, hypersensitivity and allergy, transplantation and autoimmune diseases. *Prerequisite:* BIOL 2023 or permission of the instructor. *Recommended*: BIOL 3043.

BIOL3323   **Introduction to Neurobiology**   **3 ch (3C)**

Introduces the cellular and molecular bases of nervous system function in animals. We will learn what distinguishes neurons from other cell types, survey how neurons communicate with each other, and examine how they are organized into functional circuits. We will apply these basic principles towards understanding the specific mechanisms underlying the function of sensory systems and their behavioural outputs. Examples from the primary literature will be considered. *Prerequisite:* BIOL 2023, BIOL 2028. *Strongly Recommended*: one of BIOL 3033, BIOL 3043.

BIOL3371   **Paleontology (Cross-Listed: ESCI 3271)**   **4 ch (2C 3L) [W]**

This course provides an overview of the evolution of life on Earth, its origin, diversification and its grateful expansion from sea to land. Focus is on the processes leading to fossilization and on the major events of the evolution of life. Students are introduced to the taxonomy and ecology of the non-vertebrate groups most commonly represented in the fossil record, with special attention for the fossilizable parts and their significance towards understanding the evolution of the total biosphere. Further emphasis is on how fossilized remains and traces of organisms can be used in the fields of stratigraphy, paleoecology and paleoclimatology. Credit may not be obtained for both ESCI 3271 and BIOL 3371. *Prerequisites:* One pairing of either ESCI 1001 and ESCI 1006/ESCI 1026/ESCI 1035, or ESCI 1012 and ESCI 1017.

BIOL3383   **Research Foundations in Field Ecology (O) 4 ch (C/L/T) (LE)**

Introduces field biology with emphasis on the organism, population and ecosystem levels of complexity. Based on direct observation, field techniques and analysis. Held just prior to the beginning of the academic year - 6 days in length. Further work must be completed during the fall term. Enrollment is limited, based on CGPA. The location of this course may vary. Depending upon the location, accommodation will be required. Please refer to notices posted in the Biology Department. *Prerequisites:* BIOL 2003, BIOL 2008, or equivalent.

BIOL3412   **Plant Physiology and Development**   **5 ch (3C 3L)**

An examination of how plants function, divided into three modules: (i) interactions with the environment, focusing on how plants acquire water and nutrients, transport them, use them, and control their concentrations; (ii) biochemistry and metabolism, focusing on how plants acquire energy and transform it into usable forms, and how plants construct the compounds they need; (iii) growth and development, focusing on how plants achieve their size and shape, and how they respond to environmental stimuli. Plant physiology within the context of other fields, such as evolutionary biology and ecology, is also discussed. For example, many of the physiological differences between members of the plant kingdom represent unique adaptations to the environment. From an

ecological perspective, these adaptations influence the abundance and geographic distribution of species across the planet. The lab provides training in physiological measurements, writing abstracts, and constructing graphs. *Prerequisites:* Two of the following pairs of courses: BIOL 2003 and BIOL 2008, BIOL 2063 and BIOL 2068, BIOL 2013 and BIOL 2018, BIOL 2023 and BIOL 2028, BIOL 2053 and BIOL 2103; or permission of the instructor.

BIOL3441   Ecology of Populations and Communities   4 ch (3C 3L)

To understand and link processes acting on individuals, populations and communities in space and time. To predict the response of individuals, populations and communities to disturbance, and to understand the implications of such responses for management of populations, communities and ecosystems. Students cannot receive credit for both BIOL 3441 and FOR 3445. *Prerequisites:* BIOL 2003, BIOL 2008, or FOR 2113.

BIOL3453   Plants and People   3 ch (3C)

Plants have shaped people by influencing almost every aspect of our lives: how we live, eat, heal, and play. Likewise we continue to shape plants and plant communities through our desire for particular traits, products and environments. In this course we will discuss the biological, sociological, and economic impact of our use of plants for food, drugs, shelter, landscaping and more. We will also explore some of the New Brunswick's important plant based economies such lumber, potatoes and brewing. Course evaluation will focus on student projects/presentations of a chosen relevant topic. *Prerequisites:* BIOL 1001 or BIOL 1009, BIOL 1006, BIOL 1012 or BIOL 1019, BIOL 1017, and either (one of BIOL 2003, BIOL 2013, BIOL 2103, BIOL 2023, or BIOL 2063), or (one of FOR 2113, FOR 2416, FOR 2425, FOR 2435, FOR 2505) or with the permission of the instructor.

BIOL3493   Introduction to Virology   3 ch (3C)

This course covers the fundamental features of virology including the structure and classification of viruses. We will examine the processes of viral attachment, replication, expression and assembly, and discuss various virus-host interactions including transmission, latency, evolution and disease. Modern advances in virology will also be addressed such as antivirals, vaccines, prion diseases and viral ecology. *Prerequisite:* BIOL 2023. *Recommended*: BIOL 2063, BIOL 2068.

BIOL3541   Plant Ecology (A)   5 ch (3C 3L)

A course on the factors affecting the distribution and abundance of plants, how pattern and structure at the level of populations and communities can be described quantitatively, and how these arise from the interaction of abiotic (climate, fire, soil) and biotic (competition, herbivory) factors. *Prerequisites:* BIOL 2003, BIOL 2008.

BIOL3559   Ethnobotany   3 ch (3C)

Plants have been used by humans throughout recorded history for food, shelter, recreation, and therapeutic purposes. This is an online introduction to the field of ethnobotany, the study of human uses of, and relationships with, plants. Though many types of uses are discussed, the main focus is on plants with significant medical, poisonous, or psychoactive properties and their use by humans. *Prerequisites:* BIOL 2063, BIOL 2068, or equivalents; or permission of the instructor. *Recommended:* BIOL 3083.

BIOL3593   Introductory Histology (A)   3 ch (3C)

Histology, or micro-anatomy, is the study of cells, tissues, and organs using microscopic techniques. The aim of this course is to integrate both the form and function of animal tissues (with a focus on human tissues), and examine why tissues and cells are arranged the way they are. At the end of the course, students should be able to identify and describe histological images and understand how the cellular arrangement of organs enables them to perform specialized functions. This course is intended for upper level undergraduates having at least some knowledge of cell biology, and will be of particular interest to students wanting a career in biomedical sciences and health professions. *Prerequisite:* BIOL 2023.

BIOL3603   Invertebrate Zoology   5 ch (3C 3L)

A study of the invertebrate phyla, emphasizing evolutionary origins, adaptive morphology and physiology, while covering anatomical ground plans and basic developmental patterns. Laboratory exercises include numerous dissections, and students doing an anatomical atlas of an invertebrate animal of their choice. *Prerequisites:* BIOL 2063, BIOL 2068.

BIOL3633   Biological Oceanography (O)   3 ch (3C)

This course considers how oceans, which cover more than 70% of the earth's surface, act as a dominant environmental force. It examines the processes regulating the abundance, diversity, distribution and production of microbes, phytoplankton, zooplankton and high trophic levels. By exploring the influence of physical factors (i.e. tides, waves, upwelling, light), we will see how temporal and spatial scales are critical for understanding the living ocean. *Prerequisites:* BIOL 2003; and CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017. Recommended: BIOL 2063, BIOL 2068. **NOTE**: Students planning to take the Marine Block Semester should take BIOL 3633 in advance.

BIOL3673   General Parasitology   3 ch (3C)

The biology of parasites of humans, animals of veterinary significance, and wildlife species. This course serves to integrate parasite life history, epidemiology, molecular interactions at the host-parasite interface, mechanisms of infection, host immune responses, parasite immune evasion mechanisms, pathology, diagnostics, control strategies, and therapeutics. *Prerequisite:* BIOL 2023. Recommended: BIOL 2063, BIOL 2068.

BIOL3703   Vertebrate Zoology   5 ch (3C 3L) (LE)

Stresses interrelationships between structure and function particularly as responses to a variable environment. Considers phylogeny and taxonomy of major groups. Limited enrollment. *Prerequisites:* BIOL 2063, BIOL 2068.

BIOL3713   Advanced Human Anatomy (A)   3 ch (3C)

This course takes a detailed look at the regional anatomy of the human body with emphasis on the head/neck, upper limb, and lower limb. Particular focus will be paid to the bones, muscles, blood vessels, nerves and clinically important surface anatomy of each of these four body regions. *Prerequisite:* BIOL 1711 Human Anatomy I. Credit cannot be obtained for both BIOL 3713 and BIOL 2812.

BIOL3802   Animal Physiology   3 ch (3C)

This course examines, at a fundamental level, the ways by which animals function, with an emphasis on physiological adaptations to the environment. Topics covered include respiration and circulation, metabolism and bioenergetics, thermal adaptation, ionic and osmotic regulation, and integrative neuromuscular, endocrine and sensory physiology. *Prerequisite:* BIOL 2023 or permission of the instructor. *Strongly recommended*: BIOL 2063.

BIOL3812   Comparative Vertebrate Endocrinology   3 ch (3C)

This course uses a comparative approach to examine hormonal regulation of ingestion, digestion, metabolism, reproduction and maintenance of homeostasis in vertebrates. *Prerequisite:* BIOL 2023.

BIOL3833   Forensic Biology   3 ch (3C)

Death is inevitable for all organisms; yet we are fascinated by death because, for most of us, it remains a mystery. This course will give students a foundation in the diverse field of forensic biology by examining the anatomical, physiological and biochemical basis of selected causes of death (forensic pathology), and investigating the processes and factors influencing human decomposition in a variety of conditions and environments (forensic taphonomy). It will also provide an introduction to other forensic sciences related to anthropology, ecology, entomology, and toxicology. *Prerequisites:* Any two of the following: (BIOL 1711 or BIOL 1719), (BIOL 1782 or BIOL 1789 or BIOL 2792), BIOL 2003, BIOL 2023, BIOL 2063, (BIOL 2721 or BIOL 2761 or BIOL 2769), ANTH 2504, ANTH 2505, ANTH 3523, or permission of the instructor.

BIOL3843   Forensic Biology II   3 ch (3C)

This course is a continuation of BIOL 3833 Forensic Biology I. Topics will include forensic pathology, discission of taphonomic experiments and standardized decomposition data, estimations of post-mortem interval, and the role of stable isotope analysis in forensic biology. *Prerequisite:* BIOL 3833.

BIOL3873   Ethology   3 ch (3C)

An introduction to the study and evolution of animal behaviour, and the adaptive value of behaviour. The course focuses on ecological and evolutionary aspects, but the ultimate causes and effects of animal behaviour (why these behaviours are adaptive) and the proximate mechanisms by which behaviours are elicited (e.g., neural or hormonal mechanisms and control). Students also examine a behavioural aspect of their choice in small groups, and summarize the current scientific understanding for that specific behaviour using the four levels of analysis of animal behaviour. *Prerequisite:* BIOL 2013 or BIOL 2103; or permission of the instructor.

BIOL3883   Entomology   5 ch (3C 3L)

Ecology, evolution, taxonomy, and diversity of insects, both terrestrial and aquatic. This course studies the most diverse group of animals on Earth: the Insecta. Topics include insect body plans, growth, and development; major evolutionary groups of insects; ecological and economic importance of insects; insect collection and identification. Students will make and curate insect collections (this will be accomplished most easily by students who begin the summer before taking the course; interested

students should contact the instructor for more information). *Prerequisites:* BIOL 2063, BIOL 2068, or permission of the instructor.

BIOL3908   Laboratory Studies in Vertebrate   3 ch (3C/L) (LE) [W]
Physiology

A study of selected physiological concepts via laboratory experimentation, with emphasis on presentation and interpretation of data in relation to the literature. Limited enrolment. *Prerequisite:* BIOL 2028 or permission of the instructor. *Pre- or Co-requisite:* BIOL 3802.

BIOL3933   Practical Computing in Biology   4 ch (2C 3L) (LE)

Recent advances in technology allow biologists to generate huge amounts of data in different fields such as genetics, ecology, and neuroscience. For many problems, manual data analysis is no longer possible, and biology is becoming increasingly quantitative and computationally intensive. In this course, you will learn how to approach biological problems using a basic toolkit including text processing, shell scripting, programming, data management, and data display. Previous programming experience is not required. *Pre- or co-requisite:* STAT 2264 or equivalent, or permission of the instructor.

BIOL3943   Hypothesis Testing in Biology   3 ch (C/S)

This course provides an introduction to methods that Biologists use to address, develop and test hypotheses in biology. We will ask: How do students, researchers, and professionals in biology set up questions for their research and/or assess evidence? How do they design their experiments? What traps and pitfalls do they know to look out for? How do we know if a scientific study is flawed? This course focuses more on ideas about why we do statistics and how to interpret them, rather than the mathematical details of different tests. Examples will range from cell biology to community ecology. Students will be exposed to a range of computer software necessary to explore, interpret and understand data and test hypotheses. This course will be important for students taking upper-year lab or field courses and Honours by thesis. *Prerequisite:* STAT 2264 or equivalent.

BIOL4043   Cellular Metabolism (A)   3 ch (3C/S)

Life is a chemical phenomenon. Its maintenance requires the input of energy, acquisition of electrons and essential elements from the environment, and metabolic schemes to synthesize the biological molecules required for cellular viability and replication. This course examines the unifying biochemical concepts underlying diverse metabolic strategies utilized by prokaryotes and eukaryotes. *Prerequisites:* BIOL 2023, BIOL 2063, CHEM 2401 or CHEM 2421. *Strongly recommended:* BIOL 3031, BIOL 3043, BIOL 3073, BIOL 3261.

BIOL4090   Honours Thesis Project   9 ch [W]

Honours students in Biology or in an interdepartmental program with Biology (e.g., Biology-Chemistry) who wish to undertake a thesis project in Biology are encouraged to make their wishes known to individual members of faculty. If a potential supervisor is found, the student will obtain an instruction sheet from the Undergraduate Biology office and make application to the Chair of Biology for admission into BIOL 4090 before preregistration at the end of the third year. This course involves preparation, design and execution of a research project under the direct supervision of a member of the Department as well as the preparation of a formal thesis and defense of the thesis in a seminar presentation. **NOTE**: Minimum CGPA for acceptance is 3.0. A student cannot receive credit for both BIOL 4090 and BIOL 4149.

BIOL4123   Evolutionary Medicine   3 ch (3C)

"Nothing makes sense except in the light of evolution" (Dobzhansky, 1964). Evolutionary (or Darwinian) Medicine is a relatively new field at the intersection of evolution and medicine that uses evolutionary theory and approaches to (i) address questions related to the molecular and physiological mechanisms that underlie health and disease, (ii) understand why we are susceptible to disease, and (iii) explore ways to prevent and treat disease. This course provides (i) an overview of evolutionary theory and principles as they apply to the evolution of multicellularity, development and defense mechanisms, and (ii) a framework to appreciate the role of evolution in health and disease (including cancer, aging, and infectious diseases). *Prerequisites:* One of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; BIOL 2023. *Recommended:* BIOL 3043.

BIOL4149   Senior Research Project   5 ch [W]

Gives academically strong and highly motivated students in Year IV an opportunity to do a literature or research project on a subject of interest. The student should discuss the topic with the staff member best qualified to give approval of the subject matter and to give guidance during the year. Application is made to the Biology Director of Undergraduate Studies. A student cannot receive credit for both BIOL 4090 and BIOL 4149.

BIOL4182   Experimental Embryology   4 ch (2C 3L) (LE)

This course provides students with opportunities to directly observe and independently investigate aspects of embryonic development, primarily using zebrafish embryos. The development of other species is discussed, and occasionally investigated in the lab, to provide evolutionary and theoretical context. The embryonic origins of specific organ systems and structures, developmental mechanisms underlying the processes of pattern formation, and the molecular basis of some major tissue remodeling events are studied. As well, students gain experience with advanced microscopic techniques. The course culminates with a substantive independent research project. Limited enrollment. *Prerequisite:* BIOL 3043. *Pre-* or *Co-requisite:* BIOL 3162.

BIOL4191   Wildlife Management   3 ch (3C)

Studies biological, economic, and human factors affecting wildlife populations. *Prerequisite:* BIOL 2003 or permission of the instructor.

BIOL4211   Marine Research Experience   2 ch (3 L) (LE)

Students enrolled in the Marine Block semester will be introduced to the research themes and practices in the laboratories of their professors. Groups of students will cycle through all of the marine research labs for hands on research experience throughout the semester. Students will be expected to compile short scientific-style reports outlining the results of their respective projects in each research laboratory experience. Limited enrolment. Normally taken in the same term as BIOL 4221, BIOL 4641, BIOL 4691 or BIOL 4851 or BIOL 4981, BIOL 4991 as part of the Marine Biology concentration.

BIOL4221   Diversity, Evolution and Ecology of   5 ch (C/L/S) (LE)
Marine Plants

This course will survey the diversity of marine plants (seaweed and phytoplankton) relative to one another and the other key lineages of life; exploring their diverse anatomical, cytological, life history and ecological attributes. In the laboratory students will use microscopy to explore vegetative and reproductive features of the various marine plants in our area. A significant component of the laboratory portion of the course will derive from work in the field collecting specimens for personal herbaria and completing biodiversity assessments (a cost may be associated with this trip). *Prerequisites:* BIOL 2063, BIOL 2068, or permission of the instructor. Limited enrolment. Normally taken in the same term as BIOL 4211, BIOL 4641, BIOL 4691, BIOL 4851, BIOL 4981, BIOL 4991 as part of the Marine Biology Concentration.

BIOL4233   Conservation Biology   3 ch (3C)

An overview of the theory and practice of maintaining biological diversity at genetic, species, and ecosystem levels. The course focuses on scientific principles and technical tools in conservation biology. *Pre- or Co-requisite:* BIOL 2003 or permission of the instructor.

BIOL4272   Science Communication (A)   3 ch (4S) (LE) [W]

The ability to effectively communicate scientific principles to a general audience is an important skill with applications in business, education, government, and all science and healthcare-based professions. This course will focus on a variety of science communication formats to help students plan and execute approaches for communicating receipt of advancements in biology from the academic literature. Students will practice their communications skills through writing a science blog or a relate medium. Our central focus will be popular science writing, but students will also work on communication using illustrations, presentations, and other creative works. Classes will involve discussion, writing exercises, and group work to practice clear and effective communication. The course is aimed at students in their last year of a Biology program, or an interdepartmental program that includes Biology. May only be taken by students who have completed the second-year core courses of their progam. *Prerequisites:* Permission of the instructor.

BIOL4289   Work Term IV   Cr

A written report on the scientific activities of the work term in a field of Biology as part of the Co-operative Education Program in Science. Credit for the course is dependent in part on the employer's evaluation of the student's work. (Students must have a GPA of 2.7 or better for BIOL Co-op placement.) *Prerequisite:* Work term III in a field of Science.

BIOL4302   Microbial Biotechnology (A)   3 ch (C/S)

For thousands of years, even long before they were known to exist, microorganisms have been employed by humans to produce and preserve food and to protect human health. Today, knowledge of the biochemistry, genetics, and molecular biology of microorganisms has accelerated the development of new and improved biological products and processes. In this course we will examine the production and application of microbial biotechnology products that can solve problems in agriculture, medicine, industry, and the environment. This will include an exploration of the economic, social, and safety concerns associated with the commercialization of these products. *Prerequisites:* BIOL 3261.

BIOL4351   Climate Change and Environmental Response   3 ch (3C)

Examines theories and patterns of climate change since the last Ice Age. A variety of paleoecological techniques applied to a number of fossil organisms will be discussed in relation to the information they yield about past environments. *Prerequisites:* Introductory course in anthropology, biology, or geology. May only be taken by students who have completed two years of their program.

BIOL4368   Techniques in Paleoecology and Climate Change   3 ch (3L)

The principal aim of this course is to provide students with a hands-on experience in how to study past climates and environments from the historical record preserved in lake sediments. Students will learn the common coring techniques, how to recognize different sediment types, how to reconstruct past plant communities, and how to estimate quantitatively past temperatures. *Pre-* or *Co-requisite:* BIOL 4351.

BIOL4393   Trophic and Food Web Ecology   3 ch (2C 2L) (LE)

As children we are told that 'you are what you eat', but as ecologists we lear that 'you are what, where, when, and how you eat'. This course explores the diverse trophic ecologies observed in terrestrial, freshwater and marine consumers, and how these ecologists interact to form complex food webs in each of these biomes. The course outlines the methods by which ecologists can measure consumer trophic-ecology in addition to food web size and complexity. You will learn how to measure consumer niche width, trophic interactions and food web structure using consumer diet, stable istope ratios and essential fatty acid profiles. Finally, the course examines the effects of environmental stressors such as climate change, biological invasions and land use on food web structure. *Prerequisite:* BIOL 2003 and BIOL 2008, or FOR 2113 and FOR 2505, or equivalent.

BIOL4443   International Ecology Field Course (A) 4 ch (C/L/T) (LE)

This course allows students an on-site exposure and understanding of ecological interactions of soil, climate, plants and animals in a region outside of the Maritimes. A 10-14 day field trip to the region is required. Weekly seminars will be held in the period before the field trip. Students will be charged for travel and costs associated with the course. Limited enrolment. Open to biology and forestry students, with permission of the instructor.

BIOL4463   Scientific Writing   3 ch (3C/S) (LE)[W]

A workshop and project-oriented course in scientific writing. The primary focus is on writing the journal paper. Enrolling students must have a research project (Honours thesis or other) advanced enough to be written up as part of the course activity, and must be able to share drafts with classmates. Limited enrolment. *Prerequisite:* Permission of the instructor. Credit can only be obtained for one of BIOL 4463, BIOL 4483, or BIOL 6463.

BIOL4483   Scientific Writing Workshop   2 ch (3C/S) (LE) [W]

A workshop-oriented course in scientific writing. The primary focus is on writing the journal paper. Enrolling students must have a research project (Honours thesis, independent project, or other) advanced enough to be written up as part of the course activity, and must be able to share drafts with classmates. Limited enrolment. Credit can only be obtained for one of BIOL 4483, BIOL 4463, or BIOL 6463. *Prerequisite:* Permission of the instructor.

BIOL4523   Phylogenetics   5 ch (3C 3L)

Methods for inferring evolutionary trees and their applications to the fields of comparative biology, molecular evolution, and systematics. Topics to be covered include sequence alignment, phylogenetic inference, ancestral character state reconstruction, comparative methods, and molecular adaptation. Labs emphasize practical experience in data analysis.Credit cannot be obtained for both BIOL 4523 and BIOL 6523. *Prerequisites:* One of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; BIOL 2063, and BIOL 2068, or equivalents, or permission of the instructor.

**BIOL4533   Bioinformatics: 4 ch (2C 4L) (LE)
Computational Analysis of Genes and Genomes (O)**

Explores computational methods used in sequence analysis of genomes, genes, RNAs, and proteins. Topics include sequence alignment, genome database searching, gene prediction, RNA and protein structure, DNA and protein sequence comparison, and phylogenetic analysis. These topics will be integrated into the context of research in genetics and molecular biology. Limited enrolment. *Prerequisites:* One of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103; BIOL 2023, BIOL 2028.

BIOL4563 Mathematical Biology (A) (Cross-Listed: MATH 4563) 3 ch (3C)

Overview of the field of mathematical biology. Development, simulation and analysis of simple mathematical models describing biological systems. Equal emphasis is placed on developing simple models and

case studies of successful models. The principal mathematical tools are differential and difference equations, finite mathematics, probability and statistics. This course is intended for students in their third or fourth year having an interest in biological research. *Prerequisites:* A course in statistics, MATH 2003, MATH 2013 or equivalent, or permission of the instructor. Credit may not be obtained for both MATH 4563 and BIOL 4563.

BIOL4581 Molecular Techniques in Eukaryotic Microbiology 5 ch (2C 4L)

Protists (microbial eukaryotes and related groups) constitute the vast majority of the known eukaryote diversity. This course examines the origin, evolution and diversification of the major protist groups. Lecture topics include recent classification and taxonomic schemes, ecology of important lineages, and relevance to humans. Practical components of the course include the use of microscopy for identification and documentation, sampling techniques, establishment of cell cultures, high-throughput DNA sequencing and genome-scale analyses. At the end of the course the students will have a broad and integrative view of the microbial eukaryote diversity. *Prerequisites:* BIOL 2013 or BIOL 2053 and BIOL 2103; BIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068. *Recommended:* BIOL 3033, BIOL 3043.

BIOL4641   Coastal Marine Ecology   5 ch (C/L/S) (LE)

This course examines the ecology of shorelines, with a focus on the Atlantic coast. Topics include the setting (continental drift, sea level, species origins, water movement), primary and secondary production, reproduction and recruitment, patterns (zonation) and processes (competition, mutualism, predation, disturbance), and main habitats (rocky shores, mudflats, salt marshes) There may be an additional charge for one-day field trips. Limited enrolment. *Prerequisites:* BIOL 2003, BIOL 2008, BIOL 2063, BIOL 2068. Normally taken in the same term as BIOL 4211, BIOL 4221, BIOL 4691 or BIOL 4851 or BIOL 4981, BIOL 4991 as part of the Marine Biology Concentration.

BIOL4688   Applied Studies in Parasitology (O)   4 ch (C/L/S) (LE) [W]

Designed as a follow-up to a general lecture-based course in Parasitology, and to be offered during intersession or summer session. This course emphasizes the hands-on study of animal parasites and will incorporate both field investigations and laboratory work. Students will receive training in postmortem examination, microscopy, histology, diagnostics (morphological, molecular, and immunological), experimental design, scientific writing and data presentation. There may be an additional charge for field trips (e.g. to aquaculture sites, domestic livestock farms). Limited enrolment. *Prerequisite:* BIOL 3673 or permission of the instructor.

BIOL4691   Biology of Marine Parasites   5 ch (C/L/S) (LE) [W]

Nearly every life form is host to a parasite. This course emphasizes the hands-on study of parasites of invertebrate animals and marine fishes and incorporates field investigations and laboratory work. This course serves to integrate parasite diversity and life history, aspects of the ecology of parasitism, mechanisms of infection, epidemiology, host responses to infection, and pathology. Students will receive training in post-mortem examination, microscopy, parasite identification and diagnosis (morphological and molecular). Experience with experimental design, scientific writing, and data presentation will be acquired in association with independent student research projects. There may be an additional charge for field trips. Limited enrolment. *Prerequisites:* BIOL 2003, BIOL 2008, BIOL 2063, BIOL 2068. Normally taken in the same term as BIOL 4211, BIOL 4221, BIOL 4641, BIOL 4991 as part of the Marine Biology Concentration.

BIOL4723   Ornithology (O)   5 ch (3C 3L) [W]

Studies birds; natural selection, morphological adaptations, migration, behaviour, and reproduction, in an ecological way. *Prerequisites:* BIOL 2063, BIOL 2068, or permission of the instructor.

BIOL4732   Mammalogy   5 ch (3C 3L)

Studies mammals, covering taxonomy, adaptations, reproduction, populations, physiology, behaviour and ecology. *Prerequisites:* BIOL 2063, BIOL 2068.

BIOL4741   Fish Biology   3 ch (3C)

A comprehensive study of fishes from the Agnatha to specialized teleosts. Topics covered include phylogeny, ecology, reproduction, behaviour, physiology, functional morphology, and conservation biology. *Prerequisites:* BIOL 2003, BIOL 2063, BIOL 2068, or permission of the instructor. *Recommended:* BIOL 2008; one of the pairs BIOL 2013 and BIOL 2018, or BIOL 2053 and BIOL 2103. Credit will not be given for both BIOL 4741 and BIOL 4981.

BIOL4746   Laboratory Studies in Fish Biology (A)   2 ch (3L) (LE)

This course examines practical aspects of ichthyology covered in BIOL 4741. Field trips to freshwater sites focus on assessing population size,

habitat preference, and species diversity. Laboratory exercises will include dissections, fish husbandry techniques, fish ageing, and techniques to assess fish behaviour and physiological status. Limited enrolment. *Prerequisite:* BIOL 3703 or permissions of the instructor. *Pre* or *Co-requisite:* BIOL 4741. Credit will not be given for both BIOL 4746 and BIOL 4981.

BIOL4773   River and Lake Ecosystems (A)   3 ch (3C)

Provides a foundation of understanding of ecosystem processes in streams, lakes, and wetlands. Physical and biological components of such systems will be presented, and concepts and theories defining freshwater ecology will be discussed. *Prerequisite:* BIOL 2003.

BIOL4823   Life in Extreme Environments (A)   3 ch (3C)

This course will examine the morphology, physiology and (where applicable) behaviour of organisms that thrive in environments that most living organisms could not survive. Collectively referred to as "extremophiles", these organisms will be studied in relation to (1) the type of extreme environment they exist in, (2) why the particular conditions are so difficult for other life forms, and (3) how the particular extremophiles has evolved and/or adapted to allow it to exist under the conditions described. *Prerequisites:* BIOL 2013 or BIOL 2103; BIOL 2063, BIOL 2068; and one of BIOL 3261, BIOL 3802.

BIOL4851   Ecology of Marine Birds (O)   5 ch (C/L/S) (LE)

This course treats seabirds as important components of marine food-webs. Fundamental adaptations (structure, function, physiology, life-history) of seabirds will be linked to the ecological processes driving them. The influence of major oceanographic patterns (bathymetry, currents, upwelling's) on seabird distribution and numbers will be explored. Through exploration of the role of seabirds as predators of other marine biota, and in nutrient transfer between marine and terrestrial systems, students will gain a thorough understanding of the roles played by seabirds in marine and coastal systems. Course includes an overnight field trip to Grand Manan Island, for which there may be an extra cost. Examples will be drawn from current seabird research especially in Atlantic Canada. Limited enrolment. *Prerequisites:* BIOL 2063, BIOL 2068, or permission of the instructor. *Recommended:* BIOL 3633. Offered in alternate years; normally taken in the same term as BIOL 4211, BIOL 4221, BIOL 4641, BIOL 4991 as part of the Marine Biology Concentration.

BIOL4863   Environmental Biology   4 ch (5C/L/S) (LE) [W]

Examines the effects of human activity upon the environment, both locally and globally. There may be an additional charge for field trips. Limited enrolment. *Pre- or Co-requisite:* BIOL 2003 or equivalent.

BIOL4953   Forensic Biology Seminar   3 ch (3S) (LE)

This course will take an in-depth look at peer-reviewed journal articles published in a wide variety of sub-disciplines under the broader topic of forensic biology. The aim of this course is to look at the existing literature in relevant areas of research with an eye to critiquing methodology, analysis, and conclusions of a variety of experiments that have potential implications in forensic science. *Prerequisite:* BIOL 3833.

BIOL4973   Topics in Aquatic Ecology (A)   3 ch (3C/S) (LE) [W]

Aquatic Ecology is concerned with freshwater, brackish and marine ecosystems. Two or three topics for a given year may be selected from lake ecosystems, estuarine ecosystems, plankton ecology, benthic ecology, wetland biology, wetland management. Arctic aquatic ecosystems. The course consists of lectures, seminars, and readings and assessments of the primary scientific literature. *Prerequisites:* BIOL 2003 or equivalent.

BIOL4981   Biology of Freshwater and Marine Fishes (A) 5 ch (C/L/S) (LE)

An intensive course that combines lecture material on select taxonomic, organismal and process-oriented aspects of fish biology with laboratory and field investigations of applied fisheries science. Field trips to freshwater and marine sites will focus on sampling methods, assessing population size, species diversity, ecology and environmental impacts. Laboratory exercises will include ageing, fish taxonomy, development and comparative functional morphology. Work will incorporate both group study and individual projects with an emphasis on scientific analysis and interpretation of data, including a formal seminar presentation. There may be an additional charge for field trips. Limited enrolment. *Prerequisites:* BIOL 2003, BIOL 2008, BIOL 2013 or BIOL 2103, BIOL 2063, BIOL 2068. Offered in alternate years; normally taken in the same term as BIOL 4211, BIOL 4221, BIOL 4641, BIOL 4991 as part of the Marine Biology Concentration. Credit will not be given for both BIOL 4981 and BIOL 4741/ BIOL 4746.

BIOL4991   Aquaculture in Canada   5 ch (C/L/S) (LE)

Aquaculture is the aquatic equivalent to terrestrial agriculture. We are in the midst of a global transition from hunting and gathering wild aquatic organisms to farming them. This course examines the biological principles

and constraints of commercial and pilot-scale aquaculture in Canada, with emphasis on the Atlantic region. Although the focus of the course is on fish culture, consideration is also given to bivalve and seaweed culture. Topics covered include controlled reproduction, genetics and biotechnology, nutrition and feeding, stress and disease, and sustainability. Includes an overnight field trip to the Bay of Fundy to visit commercial and research facilities (a cost may be associated with this trip). Limited enrolment. *Prerequisites:* BIOL 2063, BIOL 2068, or permission of the instructor. Normally taken in the same term as BIOL 4211, BIOL 4221, BIOL 4641, BIOL 4691 or BIOL 4851 or BIOL 4981 as part of the Marine Biology Concentration.

BIOL5473   Experimental Design and Data Analysis in   3 ch (3C 1T)
**   Biology and Forestry**

Introduces students who have previously taken a formal class in statistics to the practice and pitfalls of experimental design and data analysis in biology and forestry. It is intended for both graduate students and final year undergraduates (enrolled in an honours or senior research project). It will be jointly taught by faculty members from the Departments of Mathematics/Statistics, Biology and/or Forestry. Topics will be selected from sampling designs, experimental designs, parametric and non-parametric analysis, power analysis, and regression. The course will include discussion of examples in the literature. Students will also be analysing and interpreting data sets arising from their field of research. *Prerequisite:* STAT 2264 or equivalent.

BIOL6000 Series courses: (Graduate courses offered by the Department of Biology)

Graduate courses are open to undergraduates who can show that a course is of special value to them in their area of specialization. For details of courses offered consult the Calendar of the School of Graduate Studies and Research.

BRIDGING YEAR FOR FIRST NATIONS STUDENTS

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.
For details of the Bridging Year program, see First Nations Student Services and Programs: Mi'kmaq-Wolastoqey Centre.
Study Skills Development Courses
Non-credit courses in study skills development. Involve the use of on-campus services, non-credit training sessions, and special tutoring sessions.
BY 103N Study Skills Development I
BY 104N Study Skills Development II
Non-Credit Makeup Courses
BY 105N Secondary Education I: English
BY 106N Secondary Education II: Mathematics
BY 107N Secondary Education III: Biology
BY 108N Secondary Education IV: Chemistry
BY 109N Secondary Education V: Physics
BY 110N Secondary Education VI: Economics

BUSINESS ADMINISTRATION

This section contains course descriptions for students entering the program after September 2001. For students who entered the program prior to September 2001, please contact the Faculty of Business Administration or see the 2001-2002 Web version of the Undergraduate Calendar for BA course descriptions.
Course Numbering System
The Faculty of Business Administration uses the following numbering system for courses offered by the Faculty.

     a. The first digit

1 designates an introductory level course.
2 designates an intermediate level course which normally has a prerequisite specified in the course description.
3 designates an advanced level course which has one or more *Prerequisites* specified in the course description.
4 designates an advanced level course with several *Prerequisites* which normally is taken during the final year of studies.

     b. The second digit identifies the nature of the course as follows:

1 general	**6** quantitative analysis
2 accounting	**7** information technology
3 marketing	**8** employment relations
4 finance	**9** independent study
5 organizational behaviour and management	

c.   The third and fourth digits differentiate courses in the same field.

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

ADM1165   Business Communications I   3 ch (3C)

Examines the "real" world of business communications from writing effective e-mail and business letters to planning and delivering informative presentations. Focus is on acquiring business writing and presentation skills. Other communication variables such as non-verbal messages, group dynamics, and interpersonal skills also covered. *Prerequisites:* Open only to BBA students. BBA students normally take this course during the first term of study. Credit will not be given for both this course and ADM2165.

ADM1192   Business Planning and Entrepreneurship   3 ch (3C)

Introduce the fundamentals of business planning within the context of an entrepreneurial environment. This is a cross-functional and experiential project-based course that requires students to actively engage with the community.

ADM1195   Applied Management Skills   3 ch (3C)

Provides organizational and self - management skills development in the areas of personal skills, interpersonal skills, and group skills. Self - assessment exercises, case analyses, role-plays and other experiential forms of learning will be used to enhance student ability in areas such as developing self-awareness, coping with stress, problem solving, building positive relationships, empowering others, and leading positive change. Students will perform a self-assessment of current skills competences and knowledge complete with an action plan for personal and professional development. **Restriction:** Open only to BBA students.

ADM1213   Financial Accounting   3 ch (3C)

Examines the identification, measurement, recording, and communication of financial information for managerial decision-making. The basic principles and concepts to convey the conceptual framework of the accounting discipline are also reviewed.

ADM1313   Principles of Marketing   3 ch (3C)

Provides a foundation of marketing theory and analysis necessary to approach the decision-making process and issues related to the marketing function. BBA students normally take this course in the second term of study.

ADM1513   Organizational Behaviour   3 ch (3C)

Introduces the contributions of the applied behavioural science to the study of work in organizations. Covers the fundamentals of individuals and group behaviour, as well as, selected topics in motivation, leadership, communication, conflict and organizationl change. Credit will not be given for both this course and ADM 2513.

ADM2166   Business Communications II   3 ch (3C)

Examines contemporary strategies for successful written and oral communications in business. Theories of written and oral communication and their application to the real-world context covered with a focus on the practical applications of business contexts including: conducting interviews and surveys, writing formal business reports and proposals, and delivering persuasive arguments. *Prerequisites:* ADM 1165. BBA students must complete this course during the first 75 ch.

ADM2192   Professional Specialization Project   3 ch (3C)

Exposes students to the fundamentals of applied decision-making through case analyses and/or applied projects designed to help students transfer knowledge to practice, explore various career options, and choose a BBA major which supports their chosen career path. Experiential exercises will entail the systematic application of frameworks, models, concepts, and theories from ADM courses to multidisciplinary business situations, for which students will develop practical recommendations. The course will continue to build on the Applied Management Skills gained from ADM 1195 with a specific focus on enhancing skill development in areas such as: Critical Thinking, Communication, Collaboration, Career Exploration and Knowledge Application/Analysis. *Prerequisites*: ADM 1192, ADM 1195, ADM 1213, ADM 1313, ADM 2413, ADM 2815

ADM2223   Managerial Accounting   3 ch (3C)

Emphasizes the role of the accounting function in managerial decision-making. Traditional job costing and activity-based costing stressed. Appraises the use of standard costing and variance analysis as tools for management control. Examines flexible budgets, break-even analysis and contribution costing in decision-making. *Prerequisite:* ADM 1213.

ADM2315   Marketing Management   3 ch (3C)

Covers the application of theory and analytical tools from the marketing management perspective. Focuses upon analysis and soltions of complex marketing problems in the contemporary environment. Credit will not be given for both this course and ADM 3315. *Prerequisite:* ADM 1313.

ADM2413   Principles of Finance   3 ch (3C)

Analyses the basic tools and concepts of finance and illustrates their application to practical problems faced by managers. Topics include: the time value of money, term structure of interest rates, valuation of financial securities, financial statement analysis, financial planning, working capital management and short-term and long-term sources of financing. Provides an introduction to the techniques of capital budgeting and the concepts of risk and return on options. *Prerequisite:* ADM 1213.

ADM2623   Business Statistics (Cross-Listed: ECON 3601)   3 ch (3C)

Introduces the methods of data presentation and analysis, and their applications to business problems, including measures of data description, probability concepts and distributions, and statistical decision theory. Also considers sampling theorem, hypothesis testing using different techniques. *Prerequisites:* 30 ch, MATH 1843 or MATH 1823 and ADM 1833 or equivalents.

ADM2624   Management Science (Cross-Listed: ECON 3602)   3 ch (3C)

Presents a variety of applications of optimization models to business problems such as allocation, blending, and scheduling. Introduces concepts of production planning, inventory control, network models and sequencing. *Prerequisites:* ADM 2623. BBA students must complete this course during the first 75 ch.

ADM2713   Management Information Systems   3 ch (3C)

Covers the application of different forms of computer technologies in enterprises, supply chains, and the marketplace in general; understanding of the system solution implementation process; understanding of the role of computer technologies in altering business processes in all applications, the decision-making process normally conducted by humans but not now accomplished through tools like robotics and artificial intelligence. Specific emphasis will be placed on the development of data analytic skills using spreadsheet software in a lab-based teaching environment. *Prerequisite:* 30 ch.

ADM2815   Human Resources Management   3 ch (3C) [W]

Introduces human resource management and its role in corporate strategy. Topics include: human resource planning, recruitment and selection, employee training and development; performance appraisals; and compensation.

ADM3123   Business Law I   3 ch (3C) [W]

Examines the impact of law on business decisions and activities. Includes an introduction to the Canadian legal system, the law of contract and the law of torts. Emphasis given to the identification, evaluation, and management of legal risks in a business context. *Prerequisite:* 30 ch.

ADM3124   Aboriginal Business Law   3 ch (3C)

Examines the unique aspects of business law as it applies to Aboriginals. Topics include constitutional framework; self-government; bands, band councils and reserves; commercial relations; taxation; and employment relations.

ADM3155   Local and International Business Relations   3 ch (3C) [W]

Examines issues that arises when business transactions or institutions cross borders. Such boundaries often reflect differnces between home and host locals in terms of political, legal, economic, financial, and cultural aspects and represent a cost that firms seek to mitigate. Similar differences also exsist within Canada, such as with the theories, concepts, and tools underlying international business and an appreciation for both the similarity and diversity between actors in regional and international contexts. *Prerequisites:* ADM 1313 and ADM 2413.

ADM3192   Community Leadership   3 ch (3C)

Prepares BBA graduates to create value beyond a profit focus alone through community projects. Students solve issues for community stakeholders through engagement with community organizations. Work activities emphasize community enhancement, development, equal opportunities, and sustainability. These activities include, but are not limited to, social change, social justice, environmental protection, and sustainability. Through project reports, students communicate their reflections on the value to the firm from their proposed solutions to community problems. *Prerequisite:* Limited to BBA students with 45 Credit Hours.

ADM3215   Intermediate Accounting I   3 ch (3C)

Presents in-depth coverage of selected topics in financial accounting. Commences with a review of the theoretical foundation for financial reporting, providing the conceptual background necessary to understand generally accepted accounting principles and alternatives to these principles. Specific emphasis given to the major asset categories found on corporate balance sheets through extensive coverage of cash,

receivables, inventories, and capital assets. *Prerequisites:* ADM 1213, ADM 2223 and ADM 2413.

ADM3216   **Intermediate Accounting II**   **3 ch (3C)**

Continues the examination of the balance sheet commenced in ADM 3215 with extensive coverage of liabilities and shareholders' equity. Specific emphasis directed to several current and controversial topics in accounting - corporate income taxes, earnings per share, and leases. Concludes with an overall look at financial statements and disclosure issues. *Prerequisite:* ADM 3215.

ADM3225   **Cost Accounting**   **3 ch (3C)**

Examines cost accounting information and its use in managerial control. Deals in detail with cost accumulation, job and process costing, standard costing, and variance analysis. Supplements the material covered in ADM 2223. Reviews the use of costing techniques in other than manufacturing situations. *Prerequisite:* ADM 2223.

ADM3316   **Services Marketing and Management**   **3 ch (3C)**

Building on basic marketing elements, introduces the unique opportunities and challenges associated with the marketing of services. Topics include service and experience design and management; service delivery and capacity management; the service encounter; service failure and recovery; customer participation in service processes; satisfaction and loyalty; and customer relationship management. *Prerequisite:* ADM 2315 or ADM 3315.

ADM3345   **Marketing Research**   **3 ch (3C)**

Examines the design and conduct of research for marketing decision-making. Includes problem formulation, obtaining and organizing data, advanced analytical techniques, questionnaire design, market testing, and analysis of results. *Prerequisite:* ADM 2315 and ADM 3315.

ADM3375   **Marketing of Technological Services and Products**   **3 ch (3C)**
(Cross-Listed: TME 3346)
Provides an in-depth approach to the marketing of technology focused on industrial products and services. Includes essentials of marketing, along with aspects of product development, promotional design, distribution, pricing/budgeting determination, strategic analysis, communication skills, client/customer relations, and considerations for the small business environment. Not available for BBA degree credit.

ADM3415   **Corporate Finance**   **3 ch (3C)**

Examines portfolio theory and valuation capital, capital expenditure decisions, long-term financing decisions, cost of capital, financial structure, dividend policy, and external expansion. *Prerequisites:* ADM 2413, ADM 2623.

ADM3435   **Financial Markets and Institutions (O)**   **3 ch (3C)**

Examines the role of financial markets and institutions in the transfer of funds in Canada. Reviews the nature of assets and liabilities of financial institutions in the current regulatory framework. Considers the management of assets and liabilities of key depository and non-depository organizations, illiquidity risk, funding risk, default risk, and regulatory risk. *Prerequisite:* ADM 2413.

ADM3445   **Personal Financial Planning**   **3 ch (3C)**

Based upon the theory of financial decision-making applied to personal finance, covers the financial planning techniques used in professional practice. Topics include: financial goal setting, the life cycle model of financial planning, budgeting, tax planning, cash management, personal credit, investment choices, risk management, and retirement planning.

ADM3573   **Organization Design**   **3 ch (3C) [W]**

Examines the factors considered in the structural design of an organization. Special attention is given to the organization's external environment and internal decision structures and processes. *Prerequisite:* 45 ch.

ADM3626   **Managerial Decision Analysis**   **3 ch (3C)**

Deals with the analysis of decision problems under uncertainty, partial information, risk and competition. Considers the analytic hierarchy process, outranking procedures, and multi-attribute utility theory. Examines the construction and use of indifference curves for the solution of multi-stage decision problems, and the numerical determination of stable solutions for problems with two competitors. *Prerequisite:* ADM 2623.

ADM3628   **Advanced Statistics for Finance**   **3 ch**
(Cross-Listed: ECON 3628)

Examines theory behind statistical techniques such as analysis of variance, simple and multiple regression, non-parametric methods of estimation and hypothesis testing, and time series analysis. Examines the

application of these techniques to problems in finance and other areas of business administration. *Prerequisite:* ADM 2623.

ADM3685   **Total Quality Management**   **3 ch (3C)**

Provides a fundamental coverage of total quality management. Includes the basic principles and practices of TQM, the tools and techniques of TQM, and case studies of the implementation of TQM in the manufacturing and service industries. *Prerequisite:* ADM 2623.

ADM3875   **Labour Relations**   **3 ch (3C) [W]**

Introduces industrial relations with particular reference to unionized workplaces. Topics include: industrial relations theory; the development, structure and functions of organized labour in Canada; collective bargaining; strikes and industrial conflict; the grievance and arbitration process.

ADM4115   **Management of Innovation and Technology**   **3 ch (3C)**

Examines the strategic management of high technology and other organizations. Emphasizes innovation and the development or commercialization of intangible assets. Introduces tools and techniques for the implementation of appropriate strategies. *Prerequisites:* ADM 1313 or ADM 2313.

ADM4125   **Business Law II**   **3 ch (3C) [W]**

Introduces the law that affects various functional aspects of a business. Topics include: law of business associations including partnerships and corporations; property including real, personal and intellectual; employment including hiring and termination; finance including debtor/creditor, banking and bankruptcy; and marketing including advertising and sales. Emphasis given to the management of legal risks. *Prerequisite:* ADM 3123.

ADM4143   **Strategic Management**   **3 ch (3C)**

Examines the process of strategy formation for the business enterprise as an integrated organization. Emphasizes the problems of defining organizational mission, analyzing the dynamics of competitive rivalry, and the determinants of success or failure for alternate types of business strategies based upon a thorough company/industry analysis. *Prerequisites:* 87 BBA qualifying ch, ADM 2315, ADM 2413.

ADM4165   **Corporate Communications**   **3 ch (3C)**

Appraises how an organization communicates with internal and external audiences. Introduces principles, theories, and practices used to generate and maintain positive relationships with non-consumer audiences and to handle the diverse communication challenges found in the workplace. *Prerequisite:* ADM 1513 or 2513.

ADM4175   **Venture Start-up & Entrepreneurship**   **3 ch (3C) [W] (LE)**

Considers the problems associated with starting and operating a small enterprise. Focuses upon actual small business successes and failures. *Prerequisite:* 60 ch.

ADM4176   **Management of New Enterprise**   **3 ch (3C) [W] (LE)**

Focuses upon the development of a project proposal for starting a new business or a case study of an existing enterprise. *Prerequisite:* 96 ch.

ADM4177   **New Product Development**   **3 ch (3C)**

Examines concepts related to the management of new product development (NPD) and the role of NPD in the strategy of contemporary companies. Reviews concepts for development of winning solutions, approaches useful in organization of design process, and methods for selection/evaluation of projects. Considers concepts related to development of new services, as well as the refinement of innovative ideas and their implementation. *Prerequisites:* ADM 3345.

ADM4182   **Outsourcing (O)**   **3 ch (3C)**

Examines situations where outsourcing major portions of a firm's activities makes sense and appraises how to manage the resulting contract. Topics include: measuring outsourcing relationships, measuring performance, and driving value. *Prerequisite:* ADM 1513 or ADM 2513.

ADM4190   **Venture Assessment**   **6 ch (6C)**
Focuses on the venture assessment process from the perspective of early stage investors. The skills students learn will be valueable within investment firms and in various other settings. It would be valueable to both start-ups and large firms that seek to launch, evaluate, or support new initiatives. Students will develop a skillset that will allow them to see value by mitigating the risks that others only see as barriers. Credit will not be given for both ADM 4190 and ADM 4193. *Prerequisites:* ADM 4175 and ADM 4435.

ADM4191   **Professional Development**   **0 ch**
Equips students with non-course specific academic and professional preparation tools that build program exit confidence for post-graduation

careers. Research skills necessary for both program and professional success are introduced in appropriate courses for off-class completion. From the faculty's Illiad and B-Kat tests, ADM 1192 (Business Planning and Entrepreneurship) and ADM 1195 (Applied Management Skills) students identify their strengths and weaknesses for improvements through self-chosen, approved, verifiable activities. Completion is required for graduation.

ADM4192   **Professional Skills**   **3 ch (3C)**

Captures the experiential engagements of students throughout the BBA program. These non-class taught skills (including library, business research, and excel skills) relevant towards the successful completion of the program are moduled for completion at appropriate points prior to or during the respective courses that need them. Ingegration of requirements throughout the program permits students reflections on, evaluations and acceptance of these skill requirements as necessary. Also required are profession focused skills for the respective major areas of the program. Proficiencies in the access to, and use of, appropriate databases and software, career planning, and 40 hours of professional development activities complete the requirements. A student's advisor helps students keep verifiable track of progress in a skills portfolio and advises students accordingly before regular course registrations.

ADM4195   **Co-operative Education**   **3 ch**
Provides extensive practical experience in the professional world through the successful completion of 3 co-op work terms. For each work term, a report must be completed and receive a minimum grade of C. The Faculty will register the student for this course at the start of the final year. A student will be awarded CR (credit) for this course. *Prerequisite:* 2 previous successful work terms with passing work term reports.

ADM4196   **Internship in Business**   **3 ch [W]**
Engages students in approved work for 80 hours in a term for an approved department of an organization and under the supervision of a faculty member. Requires work on a project that is evaluated for academic assessment through a required comprehensive internship report. Open to no-major BBA candidates in good academic standing. Subject to faculty and placement availability. May not be used as a substitute for a specific major area internship (ADM 4295, ADM 4395, ADM 4495, ADM 4895) or ADM 4195. Credit will not be given for both ADM 4196 and a specific major area internship or ADM 4195. *Prerequisite:* Completion of required Year 1 and Year 2 BBA courses.

ADM4197   **Indigenous Consumer Behaviour**   **3 ch (3C)**
Provides an understanding of the relationship between consumer behaviour and economic spending, and how this understanding can be used to estimate market sizes. The focus is on how behaviours and spending factors can be utilized to determine economic leakage in indigenous communities. Community economic development and perspectives on how development can best be achieved, such as asset-based community development (ABCD), will also be emphasized. This project-based course partners with the Listuguj Mi'gmaq Economic Development Office. Students will conduct an economic leakage study within the community to complete the course.

ADM4199   **Consulting Practicum**   **3 ch (3C)**

Under the supervision of a faculty member, students provide a consulting service to a business, non-profit or government organization. Normally, this course involves the engagement of a group or groups of students who are responsible for the delivery of a report and formal presentation to a client organization. *Prerequisites:* Students must have completed 60 ch and have attained a cumulative GPA of at least 3.0. Subject to faculty supervisor and placement availability.

ADM4215   **Advanced Financial Accounting I**   **3 ch (3C) [W] (LE)**

Examines the accounting and financial reporting for inter-corporate investments and business combinations, including the preparation of consolidated financial statements for parent and subsidiary entities. Also covers segmented reporting. *Prerequisites:* ADM 2223 and ADM 3216.

ADM4216   **Advanced Financial Accounting II**   **3 ch (3C) [W] (LE)**
Examines the accounting and financial reporting issues for the translation of foreign currency transactions and statements, non-business organizations, partnerships and businesses in financial difficulty. Also covers the conceptual framework for accounting and alternative accounting measurement models. Discusses current financial reporting issues. *Prerequisites:* ADM 2223 and ADM 3216.

ADM4218   **Financial Statement Analysis**   **3 ch (3C)**

Appraises the role of financial reporting in operating, financing, and investing decisions. Develops appropriate skills in the area of financial statement analysis. Reviews generally accepted accounting principles in

Canada and elsewhere, as well as financial statement analysis of companies in different industries or geographic areas. *Prerequisites:* ADM 2223 and ADM 3415.

ADM4236   **Case Writing In Accounting**   **3 ch (3C)**

A capstone course designed to prepare students to pursue the Canadian Chartered Professional Accountant (CPA) designation. Students will further develop financial reporting, management accounting, tax, and audit competencies from prerequisite courses. Using the CPA Way methodology, students will learn to research, structure, and develop comprehensive responses to simulation cases. By the end of the course, students should be able to apply to current Canadian accounting standards to a variety of situations. *Prerequisites:* ADM 3215, ADM 3216, and ADM 3325. *Co-requisites:* ECON 3205, and ECON 4275.

ADM4245   **Accounting Theory**   **3 ch (3C) [W]**

Focuses on accounting literature, especially with respect to financial reporting, and accounting standard setting. *Prerequisites:* ADM 2223 and ADM 3216.

ADM4275   **Auditing**   **3 ch (3C)**

Introduction to the concepts and procedures underlying contemporary auditing. Topics include ethics, legal liability, internal control, audit evidence, audit reports. *Prerequisites:* ADM 2223 and ADM 3216.

ADM4295   **Internship in Accounting**   **3 ch [W]**

Involves approved work for 80 hours in a term for an accounting department of an organization and under the supervision of a faculty member. Requires work on a project that is evaluated for academic assessment. **NOTE**: Open to Honours BBA candidates with a major in accounting. Subject to faculty and placement availability.

ADM4296   **Independent Study in Accounting**   **3 ch [W]**

Preparation of an empirical or theoretical study in accounting under the supervision of a faculty member. Application required at least 30 days prior to the term in which work will be undertaken. **NOTE**: Applicants must have completed 96 ch and have attained a cumulative GPA of at least 3.0.

ADM4315   **Salesforce Management**   **3 ch (3C) [W] (LE)**

Applies theory relating to salesforce management from a manager's point of view. Requires reading and discussion of articles, which present research in the area. Entails the completion of several assignments designed to facilitate interaction with the business community. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4316   **Professional Selling**   **3 ch (3C)**

Provides an introduction to and application of the principles of personal selling for persons pursuing any vocation, as well as those aspiring to careers in Marketing. Introduces basic concepts of professional selling including: customer analysis, communication skills, effective openings and closings, and customer relations. Emphasizes the development of selling skills via sales exercises, role-plays and presentations. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4317   **Customer Relationship Management**   **3 ch (3C)**

Examines customer relationship management (CRM) as a key strategic process for organizations. Addresses benefits and problems of CRM strategy and implementation, culminating in the completion of a CRM strategic plan. Includes case analysis, student "expert" presentations, online discussions and applied appraisals. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4325   **Consumer Behaviour**   **3 ch (3C)**

Appraises concepts and their interrelationships in order to develop an understanding of consumer decision-making processes. Includes basic individual determinants of consumer behaviour, environmental influences on consumers, purchase processes, post-purchase processes, market segmentation, brand loyalty, fear appeals. *Prerequisite:* ADM 3345.

ADM4326   **Customer Satisfaction and Loyalty**   **3 ch (3C) (LE)**

Examines issues relevant to customer satisfaction and loyalty. Topics covered include the marketing concept, continuous improvement, quality, complaint behaviour, expectations, measurement, and relationship marketing. *Prerequisite:* ADM 2315 or ADM 3315 or consent of the instructor.

ADM4335   **Contemporary Marketing Issues**   **3 ch (3C) [W]**

Considers contemporary issues in marketing. Taught as a seminar-based course and requires readings and detailed discussions of articles relevant to the selected topics of enquiry. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4336   **Market Orientation**   3 ch (3C)

Examines theory and practice of market orientation for the creation and generation of enterprise growth or sustainability. Reviews variables that shape market orientation and appraises the value and role of the entrepreneur in development initiatives. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4345   **Integrated Marketing Communications**   3 ch (3C)

Examines forms of marketing communications, emphasizing their role in the Canadian environment. Includes basic communications theory related to basic consumer behaviour theory, media availability and selection, promotion channels, personal selling, industry self-regulation, role of government regulation. *Prerequisite:* ADM 3345.

ADM4346   **Social Media Marketing**   3 ch (3C)

Examines different platforms in the social media environment. Identifies and explores online marketing opportunities for individuals, marketers, and enterprises. *Prerequisite:* ADM 2315 or ADM 3315

ADM4353   **Export Market Entry**   3 ch (3C)

Appraises how to plan and implement export tactics and strategy. In addition to the study of global marketing concepts, theories, and analytical tools, students will be expected to prepare a market entry plan. Atlantic-based organizations will participate in the course as case studies. *Prerequisite:* ADM 2315 or ADM 3315.

ADM4355   **Global Marketing**   3 ch (3C) (LE)

Examines marketing decision-making in an international environment. Identifies and explores marketing problems facing enterprises undertaking expansion beyond domestic market boundaries. *Prerequisites:* ADM 2315 or ADM 3315.

ADM4395   **Internship in Marketing**   3 ch [W]

Involves approved work for 80 hours in a term for a marketing department of an organization and under the supervision of a faculty member. Requires work on a project that is evaluated for academic assessment. **NOTE**: Open to Honours BBA candidates with a major in marketing. Subject to faculty and placement availability.

ADM4396   **Independent Study in Marketing**   3 ch [W]

Preparation of an empirical or theoretical study in marketing under the supervision of a faculty member. Application required at least 30 days prior to the term in which work will be undertaken. **NOTE**: Students must have completed 96 ch and have attained a cumulative GPA of at least 3.0.

ADM4415   **Working Capital Management**   3 ch (3C)

Considers areas relating to various components of working capital. Examines practical issues and analytical models for the efficient management of cash, accounts receivable, and inventories, along with the critical appraisal of various sources of short-term funds. *Prerequisite:* ADM 2413.

ADM4416   **Applied Financial Management**   3 ch (LE)

Employs actual and simulated corporate financial cases related to financial planning and control, working capital management and capital budgeting, cost of capital and optimal capital structure, dividend policy, mergers and acquisitions, and international financial management. *Prerequisite:* ADM 3415.

ADM4421   **Mergers and Acquisitions**   3 ch (3C)

Covers the theory and practice of mergers and acquisitions. Topics include: valuation techniques and their applications; Economic forces and timing of merger activity; motives for mergers and acquisitions; market for corporate control; valuing synergies; valuing (target) firms for takeover; accounting for mergers; practical issues in mergers and acquisitions; hostile takeovers; forms of payment; M&A strategies; the role of the board of directors; best practices; empirical tests and stock market evidence of the benefits of mergers and acquisitions. *Prerequisite:* ADM 3415.

ADM4425   **Investments**   3 ch (3C) (LE)

Covers the investment environment, basic investment concepts, analysis and strategy. Considers investors' attitudes toward risk; the Markowitz portfolio theory; capital market theory and its application; the efficient markets hypothesis; expected inflation and yields on securities; options markets; securities markets, technical and fundamental analysis. Entails simulated trading using the Internet. *Prerequisites:* ADM 2624 and ADM 3415.

ADM4426   **Introduction to Financial Derivatives**   3 ch (3C) (LE)

Covers forward contracts, futures, options and swaps. Introduces the markets for each of these financial derivatives and explains their market valuations. Illustrates the application of market valuations of derivative

products through numerical problems. Also covers the use of financial derivatives in hedging risk. *Prerequisites:* ADM 2624 and ADM 3415.

ADM4435   **Entrepreneurial Finance**   3 ch (3C)

Examines the theory and practice of financing entrepreneurial firms. Topics include: financial planning and option analysis, firm valuation at different stages of development, financial fundraising with asymmetric information, fundraising alternatives and venture organization. *Prerequisites:* ADM 2413 and ADM 3415.

ADM4437   **Principles and Practice of Value Investing**   3 ch (3C)

Covers concepts and principles of fundamental analysis, financial statement analysis and common stock valuation models; examines the evidence that value investing is a viable strategy that has consistently produced above average returns. Students apply the concepts, principles and methodologies used by successful value investors to select and analyse common stocks and to make value investment decisions; practical application of value investment strategies is a significant part of this course. *Prerequisite:* ADM 2413.

ADM4445   **Theory of Finance**   3 ch (3C)

Provides theoretical underpinnings of the concepts and decision-making frameworks in corporate finance. Covers theories of choice of consumption/saving, portfolio investment, real investments, and financial structure. Also covers models of pricing risk, along with the concepts of market efficiency and inefficiency. *Prerequisites:* ADM 2624, ADM 3415, ADM 3628 or equivalent.

ADM4450   **Student Investment Fund**   6 ch (LE) [W]

Presents experiential learning of the actual financial investment process and portfolio management. Students, under the guidance of faculty advisors, manage over a $1,000,000 portion of the pension assets of the New Brunswick Investment Management Corporation (NBIMC), within the investment policies and procedures of that enterprise. Requires detailed analysis of macroeconomic, industry, and company fundamentals. Entails preparation, on a regular basis, of up-to-date reports and presentations of portfolio analysis, selection, and management. Open only to BBA students. Eligible candidates are required to complete an application form and go through an interview. *Prerequisites:* ECON 1013, ECON 1023, ADM 2223, ADM 2624, ADM 3415, ADM 4425.

ADM4455   **International Financial Management**   3 ch (3C) (LE)

Reviews the concept of balance of payments, foreign exchange markets, and exchange rate systems. Examines exchange rate risk and the economics of currency exposure and the international arbitrage process. Topics include: international portfolio management, capital flows including direct investment, the financial of international enterprises, taxation and transfer pricing, capital budgeting, and the cost of capital in an international setting. *Prerequisite:* ADM 3415.

ADM4475 (MATH 4853) Mathematics of Financial Derivatives   3 ch (3C)

Basics of options, futures, and other derivative securities. Introduction to arbitrage and partial differential equations. Stochastic calculus and Ito's Lemma. Option pricing using the Black-Scholes model. Put-Call parity and Hedging. Pricing of European and American call and put options. Number methods for the Black-Scholes model: binary trees, moving boundary problems, and linear complementarity. The barrier, and other exotic options. *Prerequisites:* MATH 2013 and 2213, STAT 2593, and CS 1003 or equivalent.

ADM4488   **Advanced Corporate Finance**   3 ch (3C)

Deepens students' abilities to better understand finance theories and apply techniques to deal with real business situations. Focus is on key financial decisions: investments, financing, and dividends. Students are provided a composite framework of how business activities fit under corporate finance. How financial theories and models provide tools to understand, analyze and solve the problems faced by finance managers is stressed. Students get to expand on the concepts learned in ADM 3415 (Corporate Finance). *Prerequisite:* ADM 3415

ADM4495   **Internship in Finance**   3 ch [W]

Involves approved work for 80 hours in a term for a finance department of an organization and under the supervision of a faculty member. Requires work on a project that is evaluated for academic assessment. **NOTE**: Open to Honours BBA candidates with a major in finance. Subject to faculty and placement availability.

ADM4496   **Independent Study in Finance**   3 ch [W]

Preparation of an empirical or theoretical study in finance under the supervision of a faculty member. Application required at least 30 days prior to the term in which work will be undertaken. **NOTE**: Students must have completed 96 ch and have attained a cumulative GPA of at least 3.0.

ADM4525   **Leadership**   3 ch (3C) [W] (LE)

Studies theoretical and practical approaches to directing people in organizations. Explores the relative effectiveness of various leadership styles in transforming organizational foci, from a managerial point of view. *Prerequisite:* ADM 1513 or ADM 2513.

ADM4526   **Motivation and Work Behaviour**   3 ch (3C)

Utilizes recent motivation theories as frameworks to analyze the effectiveness of evaluations and control methods currently found in organizations. Included is the use of information, pay administration, and participation in the design of effective organizational control systems. *Prerequisites:* ADM 1513 or ADM 2513.

ADM4535   **Ideology, Technology and Business (O)**   3 ch (3C) (LE)

Examines how ideology and technology have influenced and shaped today's society. Emphasizes the development and impact of ideology and technology on government-business relations and the freedom of business to operate. Normally open only to third and fourth year students.

ADM4615   **Operations Management**   3 ch (3C)

Presents the concepts of production planning, inventory control, network models, facility planning, scheduling and sequencing, PERT and CPM, queuing models. *Prerequisites:* ADM 2623 and 2624.

ADM4634   **Social Network Analysis (O)**   3 ch (3C)

The course will present state-of-the-art research and practice of large social network analysis. It will provide the students with a network-centric view of modern society and essential analyzing and modeling techniques for understanding and extracting information from important real-life networks arising from business, science and engineering, such as logistic/supply chain networks, financial networks, and organization networks etc. *Prerequisite:* ADM 2623.

ADM4635   **Supply Chain Management**   3 ch (3C)

Presents state-of-the-art design, control, operation, and management of supply chain systems. Focuses on the integrated management of material flow, information flow, and financial flow at three different levels: strategic, tactical, and operational. Quantitative methods and techniques necessary for the supply chain management emphasized along with case studies. *Prerequisites:* ADM 2623, ADM 2624.

ADM4656   **Location Theory and Decision Analysis**   3 ch (3C)

Provides an overview of the basic models and solution techniques in location analysis along with their applictions. Review tools from strategic decisions analysis and examines logistics issues in port and hump yard operations. *Prerequisites:* ADM 2623 and ADM 2624.

ADM4686   **Project Management (O)**   3 ch (3C)

Introduces the management tools of project selection and evaluation, the setup of a project team, and the role of a project manager. Discussion includes the quantitative techniques of managing a project in terms of time/cost estimation, scheduling, budgeting, and the other control/monitoring measures of the performance of a project. *Prerequisites:* ADM 2623 and 2624.

ADM4688   **Optimization in Finance**   3 ch (3C)

Covers optimization techniques in both linear and non-linear problems with applications in several areas of finance. Examines how to apply optimization techniques to solve real world financial problems using a suitable commercial optimization/finance package. *Prerequisites:* ADM 2413 and ADM 2624.

ADM4696   **Independent Study in Operations Management**   3 ch [W]

Preparation of an empirical or theoretical study in operations management under the supervision of a faculty member. Application required at least 30 days prior to the term in which the work will be undertaken. **NOTE**: Students must have completed 96 ch and have attained a cumulative GPA of at least 3.0

ADM4715   **Database Management**   3 ch (3C)

An introduction to database management systems. Reviews different types of database management systems. Additional topics include data modeling, query languages, database administration, data administration, security, concurrency, control and distributed databases. *Prerequisite:* ADM 2713 or ADM 3713.

ADM4718   **Technology, Security and Risk**   3 ch (3C)

Examines security and risk from a broad perspective. Topics covered include computer security, physical security of premises, shoplifting, corporate intelligence, corporate espionage, and issues of broad social importance such as airline security and terrorism. *Prerequisite:* ADM 2713 or ADM 3713 or permission of the instructor.

ADM4719   **Current Topics in MIS**   3 ch (3C)

Examines current issues in Management Information Systems. *Prerequisite:* ADM 2713 or ADM 3713 or permission of the instructor.

ADM4721   **IT & Supply Chain Management**   3 ch (3C)

Appraises the emergence of Internet-based technologies and supply chain management. Examines the intersection of three areas: introductory supply chain management, relevant aspects of Management Information Systems (MIS) and Electronic Commerce/Electronic Business and its Internet-enabled technology complements. *Prerequisite:* ADM 2713 or ADM 3713.

ADM4722   Systems Analysis and Design - User Perspectives   3 ch (3C)

Examines the development of IT systems from a user perspective. Topics include the Systems Development Life Cycle, role of users and management, critical success factors and alternative development methodologies. *Prerequisite:* ADM 2713 or ADM 3713 or permission of the instructor.

ADM4815   **Training and Development**   3 ch (3C)

Examines fundamentals of training and development function in organizations. Appraises cycle from needs assessment to evaluation and explores the influence of changes in the workplace and the availability of information technology. *Prerequisites:* ADM 2815.

ADM4825   **Compensation Management**   3 ch (3C) (LE)

Introduces the strategic role played by pay and benefits in achieving organizational goals. Topics include: forms of financial and non-financial compensation; job analysis and evaluation; pay policy and external competitiveness; pay for performance; performance appraisal; and administration of the pay system. *Prerequisites:* ADM 2815.

ADM4826   **Employment Law**   3 ch (3C)

Introduces the law relating to the individual employer-employee relationship. Examines the common law governing the contract of employment from commencement to termination. Overviews statutory regulation of the employment relationship, including: employment standards; occupational health and safety; workers' compensation; and human rights legislation. **NOTE**: Students in the MBA/LLB program will not be permitted to obtain credit for ADM 4826 and LAW 3683. *Prerequisite:* ADM 3123.

ADM4827   **Workplace Health and Safety**   3 ch (3C)

Based on the premise that occupational health, wellness and safety concerns impacts an organization's productivity and profitability. Provides an understanding of health and safety issues, legislation and programs. Reviews current issues and methodologies affecting the occupational health and safety standards and practices of Canadian organizations. *Prerequisite:* ADM 2815.

ADM4828   **Performance Management**   3 ch (3C)

The main purpose of the course is to help students design effective performance management systems. To accomplish this, the course is designed to help students approach performance management issues critically, to familiarize students with the many components of performance management systems, and to show how the right configuration of these components can help organizations achieve their strategic objectives.

ADM4835   **Contemporary Issues in**   3 ch (3C) [W]
                     Human Resources Management (O)

Examines current issues in human resource management in North America and abroad. With latitude given to the selection of topics. *Prerequisite:* ADM 2815.

ADM4845   **Human Resources Planning**   3 ch (3C) (LE)

Examines how different organizational strategies require alternate HRM policies and practices. Explores the resource allocation issues necessary for the effective management of people within a given strategy. *Prerequisite:* ADM 2815.

ADM4856   **International Human Resource Management**   3 ch (3C)

Introduces concepts, theories and issues in international human resource management. Explores how human resource management systems in other countries differ from Canada and, secondly, how human resource management of multinational corporations differ from domestic organizations. Topics include: global staffing, global pay, performance management in multinational corporations, global human resource management strategies and global labour relations. *Prerequisite:* ADM 2815.

457

ADM4857   Human Resource Selection Systems (O)   3 ch (3C)

Explores systems used by organizations to recruit and select employees. Examines employment law, techniques to screen applicants, interviewing techniques, assessment centers, biodata, and psychological tests. *Prerequisite:* ADM 2815.

ADM4878   Negotiation and Dispute Resolution   3 ch (3C)

Appraises conflict, negotiation and dispute resolution principles. Focuses on the formulation and implementation of negotiation and dispute resolution. Considers the causes and consequences of conflict, and applies contrasting approaches to negotiations and dispute resolution. **NOTE**: Students in the MBA/LLB program will not be permitted to obtain credit for both ADM 4878 and LAW 4103.

ADM4895   Internship in Human Resources   3 ch [W]

Involves approved work for 80 hours in a term for a HRM department of an organization and under the supervision of a faculty member. Requires work on a project that is evaluated for academic assessment. **NOTE**: Open to Honours BBA candidates with a major in HRM. Subject to faculty and placement availability. *Prerequisite:* ADM 2815.

ADM4896   Independent Study in HRM   3 ch [W]

Preparation of an empirical or theoretical study in HRM under the supervision of a faculty member. Application required at least 30 days prior to the term in which work will be undertaken. **NOTE**: Students must have completed 96 ch and have attained a cumulative GPA of at least 3.0.

ADM4990   Honours Thesis   6 ch [W]

Individual development and defence before a committee of a written research endeavour under the guidance of a faculty supervisor. Students are advised to consult with their intended faculty supervisor prior to the completion of 97 ch. A written request for admission to this course must be submitted to the Associate Dean, Programs, Faculty of Business Administration, no later than 1 October of a student's final year. **NOTE**: Available in designated majors and open only to Honours BBA candidates who have attained a cumulative GPA of at least 3.0. Subject to faculty availability.

ADM4995   Independent Study   3 ch

Involves planning and carrying out an empirical or theoretical investigation under Faculty supervision. Wide latitude given to the selection of topics and methods of investigation. Application for approval required at least 30 days prior to the term in which work will be undertaken. May require defence of a report before a committee of appropriate Faculty members. **NOTE**: Applications normally approved only for senior-year students who have attained a cumulative average GPA of at least 3.0.

CHEMICAL ENGINEERING

NOTE: See beginning of <u>Section H</u> for abbreviations, course numbers and coding. L* Denotes labs held alternate weeks.

CHE1001   Introduction to Chemical Engineering   1 ch (1C)

Provides an overview of the chemical engineering profession and chemical process industries. The use of unit operations to convert raw materials into useful products is introduced. Students receive a foundation in unit systems, dimensional analysis, processes and process variables in the context of engineering calculations. A framework for the remainder of the program curriculum is developed. **NOTE**: This course may not be taken for credit if previous credit has been given for CHE 2003.

CHE2003   Fundamentals I - Mass Balances   3 ch (3C)

Introduces the discipline of Chemical Engineering and develops fundamental skills of unit conversion and material balancing. Systems of units for parameters such as concentration, flow, pressure and temperature are explained. Skills for solving steady-state material balance problems on reactive and non-reactive systems. An understanding of the chemical engineering discipline is gained through examples of major industries such as petroleum, pulp and paper, mining, power production, etc. *Prerequisite:* CHEM 1982. *Co-requisite*: MATH 1503.

CHE2004   Fundamentals II - Mass & Energy Balances   3 ch (3C 1T)

Fundamentals such as vapor-liquid equilibrium, partial saturation and real gas relationships are introduced and integrated into material balance problems. The concepts of enthalpy and energy balances on open systems. Unsteady-state and simultaneous mass and energy balance systems are modeled and solved using computer packages. *Prerequisite:* CHE 2003.

CHE2012   Engineering Thermodynamics   3 ch (3C 1T)

The First and Second Laws of Thermodynamics and their application to practical problems; properties of liquid and vapours; ideal gas relationships; steam and gas power cycles and their application to steam power plants, internal combustion engines and gas turbines; combustion

characteristics; compressible flow; refrigeration and heat pumps. *Prerequisite:* CHEM 1982.

CHE2301   Transport Phenomena in Chemical Engineering   3 ch (3C)

Foundational analogies between fluid mechanics, heat transfer, and mass transfer, and the applications of those analogies to practice; Navier-Stokes, Fourier's Law, Fick's Law and Chilton-Colburn J-Factor. Turbulence: scaling, dispersion. Techniques for solving unsteady-state systems. Empirical correlations for estimating transport coefficients. *Co-requisites:* MATH 2513.

CHE2412   Chemical Engineering Laboratory I   3 ch (1C 3L) [W]

Covers bomb and flow calorimetry, material and energy balance study of the University heating plant, fluid mechanics experiments including flow meter calibrations and pressure drop measurements in pipes and fittings. Interpretation of experimental data, group dynamics, safety issues, report writing and oral presentations. Students work under close supervision. *Co-requisites*: CHE 2004, CHE 2012, CHE 2703.

CHE2501   General Materials Science   3 ch (3C 1T)

Principles relating the properties and behaviour of engineering materials to their structure; atomic bonding forces and strength of interatomic and intermolecular bonding forces, atomic arrangements in solids, structural imperfections and atom movements in solids; principles of phase diagrams and their application to multiphase materials, with particular reference to the iron-carbon system; mechanical and electrical properties of engineering material; semiconductors, polymers and ceramics; and their relation to internal structure. *Prerequisites:* CHEM 1982, MATH 1003.

CHE2506   Materials Science Laboratory   1 ch (3L*)

Laboratory experiments are conducted to illustrate behaviour of materials and other concepts covered in CHE 2501. *Prerequisite*: CHEM 1987. *Co-requisite*: CHE 2501.

CHE2525   Fundamentals of Chemical Process Design   4 ch (3C 1T) [W]

Introduces principles of chemical process design strategy and decision making. Fundamental Chemical Engineering concepts such as material and energy balances, thermodynamics, fluid mechanics and materials science are integrated into the design process. Flowsheet preparation, chemical process safety, loss prevention and project planning; codes and standards, responsible care and environmental stewardship. Engineering economics and profitability. *Prerequisites:* CHE 2003, CHE 2012, ENGG 1015. *Co-requisites*: CHE 2004, CHE 2703.

CHE2703   Fluid & Fluid Particle Mechanics   4 ch (3C 1T)

Introduction to practical fluid mechanics, including fluid properties, statics and kinematics, and fluid momentum and energy. Emphasis on internal flows: laminar/turbulent flows, friction factor, loss coefficients for fittings and valves, and pipe networks. Design of piping networks and pump selection using pump curves. Motion of particles in fluids. Theory and design of industrial equipment for clarification/sedimentation and cyclone separation. *Prerequisites:* MATH 1013.

CHE3123   Chemical Engineering Thermodynamics   3 ch (3C 1T)

Development of thermodynamic work functions and application to chemical and phase equilibria; chemical potential and other partial molar properties, First and Second Law applications in flow processes. *Prerequisites:* CHE 2012, MATH 2513.

CHE3304   Heat Transfer   4 ch (3C 1T)

A comprehensive first course in heat transfer. Thermal conductivity and unsteady state conduction. Convection heat transfer coefficients: forced convection, free convection. Boiling, evaporation, and condensation. Heat exchanger design. Radiation heat transfer. *Prerequisite:* CHE 2004, CHE 2301.

CHE3324   Unit Operations I   4 ch (3C 1T)

Analysis and design procedures for mass transfer operations based on equilibrium stage concept. Graphical procedures for simple systems. Numerical stage wise procedures. Distillation, gas absorption and liquid extraction. Flow through porous media and fluidization. *Prerequisites:* CHE 2004, CHE 2703.

CHE3332   Mass Transfer   3 ch (3C 1T)

Fundamentals of the theory of mass transport; diffusion in gases, liquids, solids, and between phases. Effect of reactions on mass transfer. Mass transfer rates by convection and dispersion. *Prerequisites:* CHE 2004, CHE 2301.

CHE3418   Numerical Methods & Modeling for   3 ch (3C)
                 Chemical Engineering Processes

Numerical methods and their applications to chemical engineering. Root finding techniques, data interpretation, least-squares regression and

numerical integration. Modeling of physical and chemical processes in the steady and unsteady states. Analytical and numerical solutions of model equations. *Prerequisite:* CS 1003. *Co-requisite*: MATH 3503.

CHE3424   Chemical Engineering Laboratory II   3 ch (1C 3L) [W]

Experiments in heat transfer. Emphasis on interpretation of experimental data, group dynamics, experimental design, and report writing. Students will work under limited supervision. *Co-requisite*: CHE 3304.

CHE3434   Chemical Engineering Laboratory III   3 ch (1C 3L) [W]

Experiments in fluid-particle interactions. Emphasis on interpretation of experimental data, group dynamics, safety issues, and report writing. Students will work under minimal supervision. *Co-requisite*: CHE 3324.

CHE3505   Chemical Process Design   4 ch (3C 1T) [W]

Preliminary sizing of equipment, optimization techniques, estimation of capital and operating costs, heat-exchanger networks, pressure vessels, and computer-based process design tools. Students work individually and in teams on process design projects that draw on knowledge gained in previous courses, concepts taught in class and information available in the literature. *Prerequisites:* CHE 2004, CHE 2525 and CHE 2703. *Co-requisites*: CHE 2501, CHE 3304.

CHE4101   Chemical Reaction Engineering   3 ch (3C 1T)

Application of principles of chemical kinetics to the design of chemical reactors. Simple idealized isothermal rectors (batch, plug flow, continuous stirred tank reactor) for single and multiple reactions. Adiabatic and non-isothermal reactors. Optimal choice of temperature. Residence time distribution and non-ideal flow systems. *Prerequisite*: CHE 3304. *Co-requisites*: CHE 3123, CHEM 3621.

CHE4341   Unit Operations 2   3 ch (3C 1T)

Theory and design of industrial equipment for drying, humidification, absorption and stripping. Adsorption, ion exchange and membranes, are covered in detail. *Prerequisite:* CHE 3324, CHE 3332.

CHE4404   Chemical Engineering Laboratory IV   3 ch (6L*) [W]

Experiments to characterize feedback control systems, gas absorption columns, chemical reactors, distillation columns and other unit operations, which underlie the practice of chemical engineering, will be conducted. Students will apply their knowledge of interpretation of experimental data, group dynamics, laboratory safety and report writing throughout this course. Experiments will be conducted independently. *Prerequisites:* CHE 3424, CHE 3434; *Co-requisites*: CHE 4101, CHE 4341; One of CHE 3424 or CHE 3434 may be taken as a co-requisite.

CHE4601   Process Dynamics and Control   4 ch (3C 1T)

Basic techniques for the dynamic analysis of elementary processes; the characteristics of controllers, control valves, measurement devices and transmitters; feedback control loops; stability of loop from the viewpoint of the roots of the characteristic equation and root locus techniques. *Prerequisites:* MATH 3503, CHE 2703, CHE 3304.

CHE5124   Adsorption and Adsorption Processes   3 ch (3C)

Surface forces, physical adsorption and chemisorption, thermodynamics of adsorption and derivation of simple model isotherms (Langmuir, Volmer, B.E.T., virial, B.L.R., Freundlich, etc.), adsorption of mixtures. Characterization of adsorbents and catalysts. Adsorption kinetics, intracrystalline diffusion in zeolites, dynamics of adsorption columns and adsorption processes.

CHE5234   Oil Refining and Natural Gas Processing   3 ch (3C)

An introduction to the physical, chemical, and engineering principles used in the processing of natural gas, petroleum, and bitumen. The nomenclature, common processes, basic designs, and relevant regulations will be covered.

CHE5244   Enhanced Oil Recovery Processes   3 ch (3C)

Overview of the secondary and tertiary enhanced oil recovery (EOR) processes commonly applied in Canada and worldwide. The fundamental EOR principles are described and examples in Canadian fields are analyzed. Some of the subjects presented include water flooding, gas flooding, miscible flooding, chemical treatments, mobility control applications, steam injection, microbial and mining operations such as oil sands production.

CHE5254   Polymer Reaction Engineering   3 ch (3C)
**   and Polymer Processing**

Basic polymer concepts. Polymer structural characteristics and properties. Mechanisms, kinetics and reactors for polymerization. Polymer rheology and transport processes. Processing applications and the effects of

processing and polymer properties. *Prerequisites:* CHE 2501, CHE 2703, MATH 3503. *Co-requisite:* CHE 3304 or equivalent.

CHE5264   Oil Sands Technology   3 ch (3C)

Fundamental principles of oil sands technology: bitumen and rock properties, origins of oil sands, types of oil sand accumulations, volumetric estimates and recoverable reserves, oil sand mining, bitumen separation and processing for production of synthetic oil, production of in-situ oil sands, description of the different processes for in-situ oil sands production currently applied or under evaluation, current research and process development, and a review of the environmental challenges of oil sands production. This course is intended for senior level students and graduate students.

CHE5274   Re-Engineering Waste – A Chemical   3 ch (3C)
**   Engineering Approach**

Comprehensive review of current and emerging chemical processes applied for the conversion (i.e., recycling and reclamation) of the following waste materials: tires, metals, plastics, paper and fabric into reusable raw material sources for the production of valuable products. *Prerequisites:* CHE 2004 and CHE 2501.

CHE5313   Energy and The Environment   3 ch (3C)

Explores generation and use of energy; extraction of raw materials through product production. Includes: survey of known energy reserves, emerging technologies, discusses the thermodynamic and regulatory constraints to energy conversion. Fossil fuels, nuclear power and renewable energy sources are described. *Prerequisites:* CHE 2012, CHEM 1982.

CHE5314   Chemical Process Industries   3 ch (3C)

A technical overview of selected chemical industries with consideration of their impact on the environment. Emphasis is on current process technology and pollution control methods. Environmental guidelines and regulations are also presented. Five modules, each covering a specific chemical industry, taught by Chemical Engineering faculty.

CHE5413   Air Pollution Control   3 ch (3C)

Sources of air pollution; modeling atmospheric dispersions; pollution control in combustion; particulate control methods; control of gaseous emissions; industrial odour control; indoor/in-plant air quality. *Prerequisite:* CHE 3324; *Co-requisite*: CHE 4341.

CHE5416   Bioseparations Science and Engineering   3 ch (3C)

The first part of the course will provide basic information on biochemistry (small biomolecules and macromolecules) and engineering analysis, such as analysis of biological activity and purity. The second part will cover a number of separation techniques, such as extraction, crystallization and drying in a more general way. This emphasis in this part of the course will be on liquid chromatography and absorption. *Co-requisite*: CHE 4341.

CHE5423   Chemical Engineering Practice School   4 ch [W]

A two-week industrial practice school in selected industrial process plants scheduled after spring examinations. Groups of students, with Faculty supervisors, are assigned to engineering projects to be carried out on industrial process units. Students are required to present an oral report to plant operating and technical personnel at the end of the practice session. A written report is also required. As there will be practical limitations to the number of students in any one practice school, application for positions in this course will be treated on a first-come, first-served basis. This course is strongly recommended as a technical elective for students not planning to complete either the co-op or professional experience programs. *Prerequisites:* CHE 2004, CHE 2412.

CHE5434   Transport Phenomena   3 ch (3C)

Foundational analogies between fluid mechanics, heat transfer, and mass transfer, and the applications of those analogies to practice. Derivation of differential and partial differential transport equations. Turbulence: boundary layers, scaling, dispersion. Core and optional models also cover key aspects of related topics such as dimensional analysis, mixing in pipe flows, reverse osmosis, ion transport, polymer rheology, and evaporation/condensation processes. *Prerequisites:* CHE 3304, MATH 2513, or equivalents.

CHE5515   Advanced Surface Characterization   3 ch (3C 1L*) [W]

This course covers the basic principles and practical aspects of several advanced surface analysis techniques which include (i) X-ray photoelectron spectroscopy (XPS or ESCA), (ii) secondary ion mass spectrometry (SIMS), (iii) confocal laser scanning microscopy (CLSM), (iv) atomic force microscopy (AFM), and (v) scanning electron microscopy (SEM). Demonstrations will be given on most of these facilities. Students will propose a research method for tackling their interested problems by

using one or two surface analysis techniques they have learned from this course. *Prerequisites:* CHE 2501, CHE 2506.

CHE5522   **Nanotechnology**   **3 ch (3C)**

Studies the science of Nanotechnology and surveys current and emerging applications of nanomaterials and nanodevices in many engineering disciplines. The unique physical properties of materials at the nano-meter scale are discussed and explained. Fabrication methods and advanced instrumentation for the construction, manipulation and viewing of nanometer-sized materials are presented. *Prerequisite:* CHEM 1982 or equivalent.

CHE5714   **Electrochemical Engineering**   **3 ch (3C)**

Electrochemical flux equations. Reversible cells. Energy producing cells. Energy consuming cells. Corrosion. Applications to include discussion of primary and secondary batteries, electrolytic processes, corrosion suppression.

CHE5724   **Special Topics in Chemical Engineering**   **1 ch (1C)**
N/A

CHE5725   **Special Topics in Chemical Engineering**   **2 ch (2C)**
N/A

CHE5726   **Special Topics in Chemical Engineering**   **3 ch (3C)**
N/A

CHE5734   **Chemical Engineering Report**   **3 ch (6L) [W]**

The major requirement of this course is a report on a subject approved by the Department. Suitable topics include experimental studies, design projects, literature surveys, feasibility studies and computation projects. Oral presentations of the work will be required.

CHE5735   **Thesis**   **6 ch (12L) [W]**

The thesis is a research project done under the supervision of a faculty member. Progress depends largely on the initiative and diligence of the individual. A detailed report is submitted on completion of the project to gain credit for the course. An oral presentation is also required.

CHE5744   **Steam Supply Systems**   **3 ch (3C)**

Historical and descriptive introduction to boiler systems is described. An introduction to different boiler and nuclear reactor types including complex Rankine cycles, steam plant efficiencies, energy and exergy analysis and heat transfer in boilers and nuclear systems is presented. Thermal transport and steam generation for steam plant heat exchangers and analysis of real plant data are included. *Prerequisites:* CHE 2012 and CHE 2703 or equivalents.

CHE5804   **Nuclear Chemical Processes**   **3 ch (3C)**

The chemistry and properties of actinides including uranium, thorium, plutonium and zirconium are described. Ore extraction processes and conversion for uranium fuel production and reprocessing are highlighted as well as isotope separation processes including deuterium separation. Reactor coolant chemistry specifications and chemical control systems are explained. *Prerequisites:* CHEM 1982, CHE 2012, CHE 2703.

CHE5824   **Corrosion Processes**   **3 ch (3C)**

This course covers corrosion and its costs, corrosion measurement, and general material and environment affects. Students use fundamental principles of thermodynamics and electrochemistry to study Pourbaix diagrams, electrode kinetics, and mixed potentials with practical applications for corrosion monitoring and testing. The eight main forms of aqueous corrosion are covered: uniform, galvanic, crevice, pitting, intergranular, selective leaching, erosion-corrosion, stress-corrosion, hydrogen effects. Corrosion in non-aqueous coolants such as liquid metals and molten salts is introduced. High temperature corrosion mechanisms relevant to nuclear power plants are discussed along with corrosion in other industrial environments. *Prerequisites:* CHE 2501, CHEM 1982.

CHE5834   **Introduction to Nuclear Engineering**   **3 ch (3C)**

This course covers radio-active decay, fission, and nuclear interactions (neutron scattering and absorption). Basics of nuclear reactor physics such as neutron diffusion elementary reactor theory, four and six factor formulae, and neutron flux variation are introduced. An overview of Gen II nuclear reactors and select Gen IV designs is provided. Other subjects covered include reactor kinetics, source multiplication, decay heat, reactor start-up and shut down, fuel burnup, fission product poisoning, and refuelling. Students will write basic codes to aid in calculations using programming logic such as loops, branching, etc. This course is intended for senior level students. *Prerequisites:* CHE 2012 or ME 2413; CHE 2703 or ME 3511, MATH 3503.

CHE5844   **Nuclear Safety and Reliability**   **3 ch (3C)**

The philosophy of safety design and operation of nuclear power reactors, responsibilities for safe operation. The role and place of regulatory agencies. The concept of risk, quantitative risk assessment. Methods for calculation of frequency and consequences of reactor accidents and evaluation of the safety level of a nuclear station. Case studies of past reactor accidents, lessons learned, and effect on future operation. *Prerequisites:* CHE 2012, CHE 2703.

CHE5855   **Nuclear Reactor Physics**   **3 ch (3C)**

Review of radioactivity, nuclear fission and fusion process, neutron scattering and absorption. Development of neutron flux equations, four and six-factor formula and their application in reactor design and operation including multi-group equations and relevant computer codes and simulations. Reactivity effects of temperature and coolant, approach to critical and reactor stability. *Prerequisites:* CHE 5834, MATH 3503.

CHE5877   **Advanced Nuclear Systems**   **3 ch (3C)**

Evolution of thermal and fast fission reactors with detailed description of different coolant types - gas, water, organic, liquid metal. Focus on advanced Generation IV nuclear reactor systems and advanced fuel cycles. Introduction to nuclear fusion processes and fusion reactor concepts. *Prerequisites:* CHE 2012, CHE 2703, CHE 5834.

CHE5913   **Pulp Production**   **3 ch (3C)**

Wood and chip requirements; overview of pulping processes; mechanism and variables in mechanical and chemimechanical pulping, general principles of chemical pulping, kraft cooking, sulphite cooking, extended and oxygen delignification, pulp washing, pulp bleaching, recovery of pulping chemicals. *Prerequisites:* CHEM 2401.

CHE5923   **Papermaking**   **3 ch (3C)**

Overview of pulping and papermaking processes; pulp and paper properties; requirements for different grades of paper and board; stock preparation; applications of fluid mechanics; wet-end chemistry; dry-end operations. *Prerequisites:* MATH 1013, CHE 2301.

CHE5933   **Biorefining: Principles, Processes and Products**   **3 ch (3C)**

This course discusses various bio-refining processes, placing emphasis on fundamental process chemistry and biology in the conversion of biomass to engineered products. Pathways for the use of wood resources are described in detail; exemplary processes, such as gasification, pyrolysis, pre-extraction and bio-diesel production are discussed. Industrial fermentation, including sugar fermentation to produce ethanol, will be explored. The modeling concept for integrated pulp manufacturing and bio-refining will also be discussed. *Prerequisites:* CHEM 2401.

CHEMISTRY

Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception may be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.
Valid WHMIS (Workplace Hazardous Materials Information System) certification is required for all students who wish to take CHEM laboratory courses. WHMIS certification workshops will be provided. Information regarding WHMIS training will be provided during the first week of classes. **NOTE**: See beginning of Section H for abbreviations, course numbers and coding.

CHEM1001   **General Chemistry I**   **3 ch (3C 1T)**

An introduction to atoms and molecules, chemical equations and reactions, the periodic table, the electronic structure of atoms, and chemical bonding as well as an introduction to organic chemistry including structure and bonding, functional groups, isomers, and polymers. An adequate high school background in math, and chemistry is required.

CHEM1006   **General Chemistry Laboratory I**   **2 ch (3L)**

Topics include: measurements and statistics, inorganic and organic synthesis, qualitative and quantitative analysis, computer modeling, and molecular geometry. WHMIS certification required (see beginning of Chemistry Courses section for details). *Co-requisite:* CHEM 1001.

CHEM1012   **General Chemistry II**   **3 ch (3C 1T)**

An introduction to gases, thermochemistry, rates of reaction, chemical equilibrium, spontaneity of reactions, reactions in aqueous solution, acids and bases, acid-base equilibria, solubility equilibria, redox reactions, and electrochemistry. **NOTE**: Credit can be obtained for only one of CHEM

1012 or CHEM 1982. *Prerequisite:* CHEM 1001; *Co-requisite*: MATH 1003 or equivalent.

CHEM1017   General Chemistry Laboratory II   2 ch (3L)

Topics include: ideal gases, heats and rates of reactions, chemical equilibria, acid-base equilibria, redox titrations, and voltaic cells. WHMIS certification required (see beginning of Chemistry Courses section for details). **NOTE**: Credit can be obtained for only one of CHEM 1017 or CHEM 1987. *Prerequisite:* CHEM 1006. *Co-requisite*: CHEM 1012.

CHEM1303   Introduction to Environmental Chemistry   3 ch (3C)

This course examines current global environmental issues that have a basis in chemistry. The chemistry of air, water, soil and living systems is described at an introductory level, while incorporating the relevance of anthropogenic activity and impact on both the causes and solutions to these problems. Core chemical foundations, such as conservation of mass, understanding the periodic table, and molecular structure, will be discussed. **NOTE**: This course cannot be used as a substitute for CHEM 1001, CHEM 1012 or CHEM 1982.

CHEM1982   General Applied Chemistry   3 ch (3C 1T)

Intended primarily for non-science majors. Building on examples from environmental chemistry, polymers, fuel cells and corrosion, this course covers chemical material properties, solutions & solubility, kinetics & equilibrium, acids & bases, thermodynamics and electrochemistry. **NOTE**: Credit can be obtained for only one of CHEM 1012 or CHEM 1982. *Prerequisite:* 70% in Grade 12 Chemistry.

CHEM1987   General Applied Chemistry Laboratory   2 ch (3L)

Intended primarily for non-science majors students. Topics include: ideal gases, heats and rates of reactions, chemical equilibria, acid-base equilibria, redox titrations, and voltaic cells. WHMIS certification required (see beginning of Chemistry Courses section for details). **NOTE**: Credit can be obtained for only one of CHEM 1017 or CHEM 1987. *Prerequisite:* 70% in Grade 12 Chemistry. *Co-requisite*: CHEM 1982.

CHEM2002   Quantum Chemistry I   4 ch (3C 1L)

Molecular symmetry. Basic quantum theory and solutions for simple models. The orbital (Hartree-Fock) model for molecules. The Huckel model. Selected contemporary topics. Includes a computer laboratory component. *Prerequisites:* CHEM 1001, MATH 2003. *Co-requisite*: MATH 2213 or equivalent.

CHEM2121   Analytical Chemistry I   3 ch (3C)

An introductory course. Topics include: concepts of acid-base, redox, precipitation and solvent extraction equilibria; error analysis and regression analysis; titrimetric and spectrophotometric analysis. *Prerequisites:* CHEM 1012 and CHEM 1017.

CHEM2136   Analytical Chemistry Laboratory I   2 ch (3L) [W]

Introduction to experimental analytical chemistry. Topics include: sample handling and preparation, calibration techniques, error analysis and regression analysis, titrimetric and spectrophotometric analysis. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 1012 and CHEM 1017. *Pre- or Co-requisite:* CHEM 2121.

CHEM2201   Fundamentals of Inorganic Chemistry   3 ch (3C)

Periodic properties of the atoms. Bonding, structures and reactions of inorganic compounds. *Prerequisite:* CHEM 1012.

CHEM2222   Introductory Chemistry of the d-Block Elements   3 ch (3C)

Redox chemistry of d-metals. Introduction to coordination compounds, electronic structures, properties and reaction. *Prerequisites:* CHEM 2201.

CHEM2237   Inorganic Chemistry Laboratory I   2 ch (3L) [W]

Introduction to preparation techniques in inorganic chemistry. Applications of IR and UV-Vis spectroscopies. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 1017, CHEM 2201, and CHEM 2416 *Co-requisite*: CHEM 2222

CHEM2321   Structural Analysis in Chemistry   3 ch (3C)

This course introduces several of the more common techniques used to study the structure of molecules in the liquid and solid state. These include ultraviolet/visible spectroscopy, infrared and Raman spectroscopy, mass spectrometry, crystallography and nuclear magnetic resonance. *Prerequisites:* CHEM 2401 or CHEM 2421.

CHEM2401   Introductory Organic Chemistry for   3 ch (3C)
**   Non-Chemistry Majors**

An introductory course intended primarily for students requiring a one-term course in organic chemistry. This course emphasizes basic organic chemistry concepts such as the naming and structures of organic compounds, functional groups and chemical reactivity, and some basic chemistry relevant to biological processes. This course is not equivalent to CHEM 2421, and is designed to provide a broader coverage of material. Students in the Biology-Chemistry or Chemistry programs must take CHEM 2421. Credit can be obtained for both CHEM 2401 and CHEM 2421. *Prerequisites:* CHEM 1012 or CHEM 1982.

CHEM2416   Organic Chemistry Laboratory I   2 ch (3L)

Introduction to experimental organic chemistry, with emphasis on laboratory techniques and structure determination. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 1017. *Co-requisite*: Either CHEM 2401 or CHEM 2421.

CHEM2421   Introductory Organic Chemistry: 3 ch (3C)
**   Structure and Properties**

An introduction to the structural and conformational features of organic molecules, and the effect of functional groups on molecular properties. This course is not equivalent to CHEM 2401; however, credit cannot be obtained for both CHEM 2401 and CHEM 2421. *Prerequisite:* CHEM 1012 or CHEM 1982.

CHEM2422   Introductory Organic Chemistry: Reactivity   3 ch (3C)

An introduction to the fundamental classes of organic reactions. *Prerequisite:* CHEM 2421.

CHEM2601   Introduction to Chemical Thermodynamics   3 ch (3C)

The three laws of thermodynamics, thermochemical calculations, chemical equilibria, introduction to phase rule. *Prerequisites:* MATH 1013 or equivalent and CHEM 1012; *Co-requisite*: MATH 2003 or equivalent or Departmental Approval.

CHEM 2882   Career Skills for Chemistry Majors   3 ch (3C)

This course is specifically designed for chemistry majors to equip students with the necessary skills to succeed in an ever-changing job market and to take advantage of a multitude of career options. Note that enrolment is restricted to students in the Chemistry and Medicinal Chemistry programs (Majors and Honours).

CHEM2903   Work Term Report I   CR

A written report on the scientific activities of the work term. A component of the grade will be based on the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for CHEM Co-op placement).

CHEM3009   Experience in Chemistry Research I   3 ch (3L) [W]

CHEM 3009 is a project based course where students conduct research under the supervision of a chosen faculty member. Students must have declared a Science Major and must have CGPA of 3.7 or better to enter after first year or a CGPA of 3.0 or higher to enter after second year. Students will be provided with a list of projects and applicants' names will be forwarded to project supervisors. Project assignment will be made by the Director of Undergraduate Studies and enrolment may be limited. Students are encouraged to plan for alternative courses in the case that no suitable project is available. A minimum of at least 3 scheduled hours per week is required and one seminar presentation will be required at the end of the academic year, as well as a written report. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 1001, CHEM 1006, CHEM 1012 and CHEM 1017.

CHEM3019   Experience in Chemistry Research II   3 ch (3L) [W]

CHEM 3019 is a project based course where students conduct research under the supervision of a chosen faculty member. Students must have declared a Science Major and must have a CGPA of 3.7 or better to enter after first year or a CGPA of 3.0 or higher to enter after second year. Students will be provided with a list of projects and applicants' names will be forwarded to project supervisors. Project assignment will be made by the Director of Undergraduate Studies and enrolment may be limited. Students are encouraged to plan for alternative courses in the case that no suitable project is available. A minimum of at least 3 scheduled hours per week is required and one seminar presentation will be required at the end of the academic year, as well as a written report. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites*: CHEM 1001, CHEM 1006, CHEM 1012, CHEM 1017, and CHEM 2009.

CHEM3122   Analytical Chemistry II   3 ch (3C)

Principles of both equilibrium-based and basic instrumental methods of analysis. Topics include non-aqueous and complexometric titrations, analytical separations, potentiometry, analytical spectrophotometry, gas chromatography, elementary chemometrics, sample preparation and method development. *Prerequisite:* CHEM 2121.

CHEM3137   **Analytical Chemistry Laboratory II**   **2 ch (3L)**

Applications of both equilibrium-based and basic instrumental methods of chemical analysis. Experiments are designed to illustrate the applications of non-aqueous and advanced titration methods, analytical separations, potentiometry, analytical spectrophotometry (atomic and UV-vis), liquid chromatography (HPLC), sampling and method development. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 2121 and CHEM 2136.

CHEM3201   **Advanced Chemistry of the d-Block Elements**   **3 ch (3C)**

Transition metals, organimetallic, chemistry and catalysis. Introduction to biological inorganic chemistry. *Prerequisite:* CHEM 2222.

CHEM3236   **Inorganic Chemistry Laboratory II**   **2 ch (3L) [W]**

Advanced preparative techniques in inorganic chemistry. Applications of IR and NMR spectroscopies. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 2237.

CHEM3421   **Intermediate Organic Chemistry**   **3 ch (3C)**
Mechanisms and Synthetics

The mechanistic aspects of organic reactivity and the application of selected reactions to synthesis of organic molecules. *Prerequisites:* CHEM 2422.

CHEM3422   **Advanced Organic Chemistry**   **3 ch (3C)**
Reactions and Mechanisms (O)

A focus on the development of mechanistic and synthetic strategies through the study of pericyclic, rearrangement, and organometallic reactions. *Prerequisite:* CHEM 3421.

CHEM3423   **Advanced Organic Chemistry**   **3 ch (3C)**
Stereochemistry (O)

A focus on the development of mechanistic and synthetic strategies through the study of conformational analysis, stereoelectronic effects and asymmetric synthesis. *Prerequisite:* CHEM 3421.

CHEM3523   **Medicinal Chemistry**   **3 ch (3C) [W]**

An introduction to medicinal chemistry. Sample topics include the drug discovery process, the medicinal chemistry of enzymes, receptors, and nucleic acids, as well as modern experimental and computational approaches to drug design. Chemical aspects of current protein and nucleic acids tools will also be covered. *Prerequisites*: BIOL 2023 and either CHEM 3421 or CHEM 3422.

CHEM3621   **Chemical Kinetics and Electrochemistry**   **3 ch (3C)**

Elementary electrochemistry, electrochemical cells, electrolysis, electromotive forces, applications of EMF measurements. Reaction kinetics and mechanisms, uni- bi-, and termolecular reactions, catalysis, enzyme catalysis, chain reactions, reaction dynamics, steric effects and transition state theory. *Prerequisites:* MATH 2003 or equivalent, CHEM 2601 (or CHE 2012 for Chemical Engineering students only).

CHEM3637   **Physical Chemistry Laboratory I**   **2 ch (3L) [W]**

Introduction to experimental physical chemistry. Topics include areas in thermochemistry, kinetics and electrochemistry. Some experiments have computational chemistry components. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 2002, CHEM 2601 and CHEM 3621.

CHEM3857   **Organic Chemistry Laboratory II for**   **2 ch (3L)**
non-Chemistry Majors

Advanced techniques and reactions in experimental organic chemistry, with an emphasis on synthetic techniques. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 2416; *Co-requisite*: CHEM 2422. **NOTE**: Credit can be obtained for only one of CHEM 3857 or CHEM 4416.

CHEM3886   **Analytical Chemistry Laboratory for**   **2 ch (3L)**
Chemical Engineers

This course teaches the basic techniques and data treatment in chemical analysis. The experimental content covers handling skills, titration methods and the applications of instrumental methods (UV-visible, and flame atomic absorption spectrophotometry and potentiometry) to analyse real samples. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisites:* CHEM 1982 and CHEM 1987.

CHEM3897   **Organic Chemistry Laboratory for**   **1 ch (3L)**
Chemical Engineers (*)

Introduction to experimental organic chemistry, with an emphasis on purification techniques. The synthesis of commercially valuable compounds will also be addressed. WHMIS certification required (see beginning of Chemistry Courses section for details). *one three-hour lab

every other week for 10 weeks. *Prerequisites:* CHEM 1987 and CHEM 2401.

CHEM3903   **Work Term Report II**   **CR**

A written report on the scientific activities of the work term. A component of the grade will be based on the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for CHEM Co-op placement.) *Prerequisite:* Work Term Report I in a field of Science.

CHEM4000   **Senior Research Projects**   **9 ch [W]**

CHEM 4000 is a project-based course where students conduct research under the supervision of a faculty member. Students must be in their final year of any Chemistry program or in any interdepartmental program involving Chemistry (including General Science) and must have a CGPA of 3.0 or better. Honours students in an interdepartmental program with chemistry may choose to complete their honours project in chemistry. A minimum of at least 9 scheduled hours per week is required throughout the year, and a thesis and seminar presentation will be required at the end of the academic year. Students must complete the application form, available from the CHEM 4000 coordinator, and submit it to the course coordinator no later than March 15th of their penultimate year. Upon consideration by the Department, applicants will be notified on May 1st of that year. Enrolment is subject to project availability. Students who are unsuccessful in procuring a CHEM 4000 project are encouraged to pursue an Honours by Course option, and should meet with the Director of Undergraduate Studies to discuss this option as soon as possible. WHMIS certification required (see beginning of Chemistry Courses section for details). *Co-requisite*: 4th year level lecture courses in selected project area.

CHEM4013   **Quantum Chemistry II**   **3 ch (3C)**

Advanced electronic structure methods for many-electron molecular systems. *Prerequisite:* CHEM 2002.

CHEM4112   **Advanced Analytical Chemistry**   **2 ch (2C)**

Advanced topics in analytical chemistry. *Prerequisite:* Departmental approval.

CHEM4212   **Main Group Inorganic Chemistry**   **3 ch (3C)**

Perodic trends and applications in Materials Science. *Prerequisite:* CHEM 2201.

CHEM4222   **Advanced Inorganic Chemistry**   **2 ch (2C)**

Advanced topics in inorganic chemistry. *Prerequisite:* Departmental approval.

CHEM4416   **Organic Chemistry Laboratory II**   **2 ch (3L)**

Advanced techniques and reactions in experimental organic chemistry. Topics include functional group manipulation, carbon-carbon bond formation reactions, inert atmosphere techniques, and structure determination through spectroscopy. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 2416. *Co-requisite*: CHEM 3421. **NOTE**: Credit can be obtained for only one of CHEM 3857 or CHEM 4416.

CHEM4422   **Advanced Organic Chemistry: Selected Topics**   **2 ch (2C)**

Selected advanced topics in organic chemistry. *Prerequisite:* Departmental approval.

CHEM4503   **Biocomputing in Drug Design**   **5 ch (3C 3L)**

Introduction to biocomputing in the pharmaceutical industry. Topics include molecular modeling, rational drug design, high throughput screening and combinatorial chemistry, protein modeling and 3D bioinformatics. Course includes lectures and a computer laboratory component. **NOTE**: This course may be taken for either Computer Science or Science credit. *Prerequisites:* CHEM 3523 or permission of the instructor.

CHEM4513   **Medicinal Chemistry Seminars**   **3 ch (3C)**

Selected Topics in Medicinal Chemistry. **NOTE** that enrolment is limited to students in the Chemistry, Medicinal Chemistry, and Biology-Chemistry Comprehensive programs (Majors and Honours). Students in other programs must obtain permission from the instructor to register for this course. *Prerequisites:* CHEM 3421 and CHEM 3523.

CHEM4601   **Molecular Spectroscopy (A)**   **3 ch (3C)**

Molecular Spectroscopy Electronic, vibrational and rotational spectra of diatomic and polyatomic molecules. Radiative and non-radiative transitions. Nuclear magnetic resonance and electron-spin resonance spectroscopy. *Prerequisite:* CHEM 2002.

CHEM4612   Statistical Mechanics and Reaction Theory (A)   3 ch (3C)

Probability distributions, ensembles, Maxwell-Boltzman distribution, partition functions, hard sphere collision theory, potential energy surfaces, transition state theory, reaction dynamics. *Prerequisites:* Math 2003 and 2213 or equivalent, CHEM 2002 and CHEM 3621.

CHEM4616   Physical Chemistry Laboratory II   2 ch (3L) [W]

Experiments illustrating the fundamentals and applications of spectroscopy in the ultra-violet visible (UV-vis), infrared (IR) and radiofrequency (NMR) regions. Many experiments have computational chemistry components. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 3637. *Co-requisite*: CHEM 4601.

CHEM4622   Advanced Physical Chemistry   2 ch (2C)

Advanced topics in physical chemistry. *Prerequisite:* Departmental approval.

CHEM4886   Physical Chemistry Laboratory for Chemical   2 ch (3L)
**   Engineers**

This course consists of experiments in chemical kinetics and electrochemistry. Topics include order of reaction, activation energies, reaction mechanisms, solution conductivities, enzyme kinetics and fast reaction kinetics. WHMIS certification required (see beginning of Chemistry Courses section for details). *Prerequisite:* CHEM 3621.

CHEM4903   Work Term Report III   CR

A written report on the scientific activities of the work term. A component of the grade will be based on the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for CHEM Co-op placement.) *Prerequisite:* Work Term Report II in a field of Science.

CHEM4909   Directed Studies in Advanced Chemistry   3 ch

Students may pursue directed studies in specific areas and topics related to chemistry. These studies may involve any of the chemistry disciplines. The content and process of each directed study will be determined through negotiation between a student and the supervising faculty member(s). Departmental approval is also required.

CHEM4919   Directed Studies in Advanced Chemistry   3 ch

Students may pursue directed studies in specific areas and topics related to chemistry. These studies may involve any of the chemistry disciplines. The content and process of each directed study will be determined through negotiation between a student and the supervising faculty member(s). Departmental approval is also required.

<u>CHINESE</u>

Courses in Chinese Language are offered at the Introductory level and occasionally at the Intermediate level if resources are available.
See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

CHNS1013   Introductory Chinese I   3 ch (3C)

This introductory course acquaints students with some of the fundamentals of Modern Standard Chinese (Mandarin) and provides basic oral communication skills. Romanized transcription is used. Not open to students with any knowledge of Chinese.

CHNS1023   Introductory Chinese II   3 ch (3C)

This course is a continuation of Chinese I (CHNS 1013). It aims to expand the basic communicative skills, and also progressively introduces a limited number of characters for reading comprehension purposes. Not open to students to with any knowledge of Chinese. *Prerequisite:* CHNS 1013.

CHNS2013   Intermediate Chinese I   3 ch (3C)

This course is intended for students with limited prior background in spoken and written Chinese and is offered to consolidate oral communicative skills acquired in CHNS 1013 and CHNS 1023. Additional Characters will be introduced for the purposes of reading and writing. Not open to students with any knowledge of Chinese. *Prerequisites:* CHNS 1013 and CHNS 1023.

CHNS2023   Intermediate Chinese II   3 ch (3C)

This course is a continuation of Intermediate Chinese I. It aims mainly to expand the oral communicative skills. More characters will be introduced at this level for reading comprehension purposes. Not open to students with any knowledge of Chinese. *Prerequisite:* CHNS 2013.

CHNS3013   Advanced Chinese I   3 ch (3C)

This course is a continuation of Intermediate Chinese I and II. It aims at expanding the oral communication skills in Chinese with a focus on Chinese characters. Over 300 characters will be introduced for reading

and writing purposes. This course is open to students who have mastered Chinese phonetic transcriptions of Chinese characters (Mandarin Pinyin). *Prerequisite:* CHNS 2023. Not open to Mandarin and Chinese dialect speakers.

CHNS3023   Advanced Chinese II   3 ch (3C)

This course is a continuation of CHNS 3013. It aims at expanding the oral and written communication skills in Chinese. More characters will be introduced for reading and writing purposes. This course is open to students who have mastered Chinese phonetic transcriptions of Chinese characters (Mandarin Pinyin). *Prerequisite:* CHNS 3013. Not open to Mandarin and Chinese dialect speakers.

<u>CIVIL ENGINEERING</u>

Prerequisites and *Co-requisites* are indicated for specific courses where required. Under exceptional conditions the prerequisite or *Co-requisites* requirement may be waived with the consent of the instructor and the Department Chair. The following courses (or equivalents) are *Prerequisites* for all 3000-level or higher Civil Engineering courses: CE1023, ENGG 1001, ENGG 1003, ENGG 1015, CS 1003, MATH 1013, MATH 1503.
The availability of elective courses should be verified with the Department of Civil Engineering before selection.
NOTES:
1. See beginning of <u>Section H</u> for abbreviations, course numbers and coding.
2. * indicates laboratory periods are scheduled for alternate weeks.
3. [W] indicates courses with a significant amount of writing in English. (HIST 3925 or SOCI 2534 in the CE CORE program also have a [W] designation.)

CE1023   Statics for Engineers   4 ch (3C 2L)

Forces and moments are introduced with vector algebra, followed by the application of equilibrium conditions for particles and rigid bodies. Free body diagrams (FBDs) are used to analyze trusses and frames, as well as internal member forces (bending moment and shear force diagrams). Additional topics include friction, centroids, and moments of inertia. *Prerequisites:* PHYS 1081, MATH 1003, MATH 1503 *Co-requisite*: MATH 1013.

CE2023   Mechanics of Materials   5 ch (3C 3L)

Elastic and plastic stress, strain; behaviour of beams and columns; torsion; material strength. *Prerequisite:* CE 1023. *Co-requisite*: MATH 1013.

CE2033   Structural Analysis   5 ch (3C 3L)

Influence lines, calculation of deflections, flexibility analysis, stiffness analysis and approximate analysis. *Prerequisite:* CE 2023.

CE2113   Soil Mechanics I   4 ch (3C 3L*)

Soil properties, seepage, effective stress, consolidation, shear strength. *Prerequisites:* ESCI 1001, ESCI 1026, CE 2023. *Co-requisite*: CE 2703.

CE2703   Introduction to Fluid Mechanics   4 ch (3C 1T)

Physical properties of liquids and gases, fluid statics, kinematics of fluid flow, energy considerations in steady flow, momentum and dynamic forces in fluid flow, fluid measurements, introduction to forces on immersed bodies. *Prerequisites:* CE 1023, MATH 1013.

CE2913   Numerical Problem Solving   4 ch (3C 2L)

An introduction to the application of numerical methods and statistical techniques to the solution of civil engineering problems. Introduction to the systems approach and system analysis terminology. Numerical solution of civil engineering problems using root finding, interpolation, integration, and the solution of systems of algebraic equations. Introduction to the numerical solution of ordinary and partial differential equations. Techniques such as multiple linear regression, stepwise regression, time series analysis, nonparametric tests, and optimization are applied to the design and operation of civil engineering systems. *Prerequisites:* CS 1003, STAT 2593, MATH 1503, MATH 2513

CE2973   Civil Engineering Design I   3 ch (2C 2L) [W]

Continued development of communication skills used by engineers through the application of the design process to meet a well-defined set of requirements and constraints. Communication aspects emphasized include graphical representations of designs, formalized design calculations, and the development of project schedules and estimates. Design aspects emphasize the generation, iteration and analyses of alternatives. *Prerequisites:* ENGG1003, ENGG 1015

CE3053   Reinforced Concrete Design I   4 ch (3C 2L)

Introduction to design of reinforced concrete structural elements by limit states design. Design of beams and one way slabs for flexure and shear,

bond and development of reinforcement, serviceability limits, columns, and footing design. *Prerequisites:* CE 2033, CE 3513.

CE3063 **Structural Steel Design** **4 ch (3C 2L)**

Introduction to design of steel structures using limit states design principles. Topics include an introduction to the National Building Code, steel as building material, steel shapes, tension members, compression members, beams and connections. *Prerequisite:* CE 2033.

CE3123 **Foundation Engineering I** **4 ch (3C 1T)**

Lateral earth pressures, shallow and deep foundations, stability of cuts and slopes. *Prerequisite:* CE 2113.

CE3201 **Transportation Engineering** **5 ch (3C 3L)**

Principles of transportation engineering: modal characteristics, travel demand functions, traffic flow theories and models, and vehicle-track principles. Highway transportation classification, elements and design principles. Laboratory work is field-oriented and involves elementary traffic studies. *Prerequisite:* STAT 2593.

CE3403 **Environmental Engineering** **4 ch (3C 3L)**

Introduces the principles of Environmental Engineering including: the application of mass and energy balances to environmental problems; the impact of pollution on ecosystems and society; water and air pollution control engineering; water quality; solid waste management and global environmental issues. Laboratory anaylsis of water quality parameters. Field trip to a local pollution control facility. *Prerequisite:* CE 2703 or CHE 2703.

CE3513 **Materials for Civil Engineers** **4 ch (3C 2L)**

The manufacture and use of Portland cement, concrete, and concrete products. Structure, production, properties, and use of cement, concrete, asphalt and wood. *Prerequisite:* CHE 2501.

CE3603 **Construction Engineering** **4 ch (3C 2T)**

The management of on-site construction processes for various project objectives (e.g., time, cost, safety, quality, environment), contracting processes and common construction work processes. Application of the NB Occupational Health and Safety Commission Act and Regulations to construction is covered. Relationships of participants in the construction industry. Standard contract documents. *Prerequisite:* CHE 2973.

CE3713 **Hydraulics and Hydrology** **5 ch (3C 3L)**

Analysis of water flow in pipes;simulation of water distribution networks; characteristics of pumps; open channel flow. The hydrological cycle; precipitation, runoff and hydrograph analysis; return period; the Rational Method; groundwater flow. *Prerequisite:* CE 2703. *Co-requisite:* CE 3913.

CE3963 **Engineering Economy** **3 ch (3C)**

Basic methods of engineering economy including time value of money, compound interest models, interest and discount rates, and depreciation; critical path methods. Emphasis is placed on commonly used computational procedures. Restricted to students with at least 60 ch completed.

CE3983 **Civil Engineering Design II** **3 ch (1C 4L) [W]**

Design of a system or process to meet desired needs within identified constraints and communication of the result to a broader audience. Design topics include the identification and application of standards, codes and regulations, and approaches for managing a broad set of design constraints such as health and safety, sustainability, economic, environmental, social, constructability, operability, and ethical. Communication skills developed in this course emphasize interaction with clients and the public. *Prerequisites:* CE 2973, CE 3201, CE 3603.

CE4993 **Senior Team Design** **6 ch (1C 3L)**

Working in teams, students will complete a full year civil engineering design project that draws on their combined knowledge from the core courses in the program. By engaging an identified client with a design problem, student teams will work through the entire process of developing a design solution with the support of industry and academic mentors. Students will manage their projects professionally, prepare comprehensive design documentation, and present and defend all aspects of their design to the client and a broader audience. *Prerequisite:* Completion of all Civil Engineering core courses. Exceptions will be considered on a case-by-case basis.

CE5003 **Structural Dynamics** **4 ch (3C 2L)**

Dynamic equilibrium of structural engineering problems with topics including linear dynamics, discrete and continuous systems, free and forced vibration, transient response using numerical integration and Duhamel's integral, and model analysis of multi-degree-of-freedom systems. Practical problems exploring structures under dynamic loads

such as earthquake, wind, and blast are covered. *Prerequisites:* CE 2913, and either CE 3053 or CE 3063.

CE5043 **Structural Engineering** **4 ch (3C 2L)**

Fundamentals of the stiffness method analysis of trusses, beams and frames using the matrix stiffness method. Concepts of structural systems including common systems in buildings and bridges are introduced. Application of structural engineering computer software is introduced. *Prerequisite:* CE 3063.

CE5053 **Reinforced Concrete Design II** **4 ch (3C 3L)**

Continuation of CE 3053. Includes a review of flexure and shear requirements for limit states design, serviceability limits and deflection calculations, torsion, slender columns, continuity, two-way slabs, and footing design. Consideration of prestressed concrete, strut-and-tie modeling, and comparison with ACI design code requirements. Requires a group design project. *Prerequisite*s: CE 3053

CE5062 **Introduction to the Finite Element Method** **4 ch (3C 2L)**

Basic concepts and mathematical foundations of the Finite Element Method (FEM). Application of the FEM for numerical simulation of engineering problems. Students apply the FEM theories to develop basic computer programs; students are also introduced to commercial finite element software. *Prerequisite:* CE 5043 or permission of the instructor.

CE5063 **Structural Steel Design II** **4 ch (3C 2L)**

The behaviour of beam-columns, plate girders, composite steel/concrete girders, and welded and bolted connections are presented and design methods are developed. The concepts of structural stability, fatigue, common structural systems in steel buildings and bridges, and application of computer in structural steel design are also introduced. *Prerequisites:* CE 3053, CE 3063.

CE5073 **Structural Masonry Design** **4 ch (3C 2L)**

Review of structural principles and codes relating to masonry and properties of masonry components; analysis and design of components; architectural and construction considerations related to masonry. *Prerequisites:* CE 3053, CE 3063.

CE5083 **Structural Wood Design** **3 ch (3C)**

Introduction to structural principles and codes relating to wood design. Consideration will be given to the design of individual elements (beams, columns, etc.) and systems of elements (shear walls, laminated bridge decks, etc.), as well as available computer software to assist in wood design. *Prerequisite:* CE 2033.

CE5132 **Foundation Engineering II** **3 ch (3C)**

A continuation of earlier soils engineering courses dealing with shallow foundations (including design of reinforced concrete footings), deep foundations, excavations, cofferdams and factors relating to foundation design. *Prerequisite:* CE 3123.

CE5163 **Advanced Soil Mechanics** **4 ch (3C 2L)**

Advanced topics in permeability and seepage; consolidation; constitutive models; triaxial testing. Laboratory component includes triaxial, consolidation, and flexible wall permeability tests. *Prerequisite:* CE 2113.

CE5203 **Transportation Planning** **4 ch (3C 2L)**

Topics focus on several aspects of transportation planning, including studies and survey methods, data collection and analysis techniques, transport models, Geographic Information Systems in transportation (GIS-T), and transportation governance and policy. *Prerequisite:* CE 2913, CE 3201.

CE5212 **Pavement Design I** **4 ch (3C 3L)**

A study of the design and construction of highway pavements. Production and testing of bituminous materials, design of bituminous mixtures, thickness design for flexible pavements, design of rigid pavements, and construction methods. *Prerequisite:* CE 2113, CE 3201, CE 3515.

CE5222 **Traffic Engineering** **4 ch (3C 3L)**

Single vehicle and traffic stream characteristics; traffic studies; surveys, and analysis; traffic control devices; operations and economics of intersections and interchanges; traffic accident studies; legal and administrative aspects. *Prerequisite:* CE 3201.

CE5232 **Transport Facility Design** **4 ch (3C 2L) [W]**

Topics focus on the analysis and design of highway and rail infrastructure and incorporate the economic, environmental and operational issues associated with facility development. *Prerequisite:* CE 3201.

CE5241 **Infrastructure Asset Management** **3 ch (3C)**

Basic concepts in infrastructure management; programming of investments over a network of infrastructure assets; optimization of

individual level project investment; evaluation techniques; structure and manipulation of data banks for infrastructure management systems. *Prerequisite:* CE 2913, CE 3201, CE 3963.

CE5411   **Water Supply and Wastewater Removal**   **3 ch (3C)**

Design, operation, and rehabilitation of municipal water and sewer systems with a focus on asset management. Topics include estimation of water and wastewater flow rates, transportation and distribution of potable water, collection and conveyance of wastewater, and modelling system performance. *Prerequisite:* CE 3713, CE 3963.

CE5421   **Water Quality and Treatment**   **4 ch (3C 2L)**

Applied water chemistry, epidemiological analysis, drinking water sources and characterization, unit operations and processes in drinking water treatment plants and their preliminary design, water treatment plant design, public health issues and case studies. The content is focused towards drinking water quality and treatment issues. *Prerequisites:* CHEM 1982 (or equivalent) and CE 3403 or CHE 2004, or permission of course instructor.

CE5432   **Wastewater Treatment and Pollution Control**   **4 ch (3C 2L)**

Wastewater characterization (physical, chemical, and biological), wastewater treatment unit operations and processes, industrial and municipal wastewater treatment (preliminary, primary, secondary, and tertiary), wastewater treatment plant design. The course content will focus on a typical municipal wastewater treatment plant and operations. Water pollution control strategies and public health issues are also examined. *Prerequisites:* CHEM 1982 (or equivalent) and CE 3403 or CHE 2004, or permission of course instructor.

CE5463   **Municipal Solid Waste Management**   **3 ch (3C)**

Application of systems engineering principles and techniques to problems associated with the generation, collection, processing, recycling, treatment and disposal of municipal solid wastes. Modeling and optimization of solid waste management systems using linear, integer & dynamic programming. Design of collection systems, recycling facilities and composting operations. *Prerequisite:* CE 3403, CE 2913.

CE5503   **Concrete Technology**   **4 ch (3C 2L)**

In this course the properties of cement and concrete materials are studied. Topics include (i) materials for concrete, such as Portland cements, supplementary cementing materials, aggregates, and chemical admixtures; (ii) procedures for mix proportioning, batching, mixing, transporting, handling, placing, consolidating, finishing, and curing concrete; (iii) precautions necessary during hot- and cold-weather concreting; (iv) causes and methods of controlling volume changes; (v) commonly used control tests for quality concrete; (iv) introduction to special types of concrete. Applicable ASTM, AASHTO, ACI, and CSA standards are discussed. *Prerequisite:* CE 3513.

CE5612   **Construction: Financial and Industry Issues**   **3 ch (3C)**

Financial aspects of construction including methods and techniques for: estimating costs of construction; project financing and managing risks; and monitoring and controlling costs. Introduction to current issues within the industry, primarily from the financial perspective (e.g., infrastructure management, sustainable construction, quality management, technology adoption). *Prerequisites:* CE 3603, CE 3963.

CE5623   **Project Management**   **4 ch (3C 1T)**

Application of management methods for construction projects. Emphasis on supervisory management, contracts, and management methods. Application of critical path methodology for work organization and management control, including planning and scheduling, resource management, optimization techniques and cost control methods. Restricted to students with at least 100 ch successfully completed. *Prerequisite:* CE 3603.

CE5633   **Construction: Advanced Technologies.**   **3 ch (3C)**

Learn about tools and techniques required for analytics and visualization in modern construction engineering and management (CEM). Emphasis is on the use of mathematical and optimization/simulation modeling (e.g. queue theory and analytical hierarchy process) in combination with visualization tools to support CEM decisions. *Prerequisite:* CE 3603.

CE5721   **Ecohydraulics**   **4 ch (3C 2L)**

Covers important topics in urban engineering hyrology, including: quantification of hydrological processes relevant to watershed water management, predicition of surface runoff and stream response, mitigation of impacts of urbanization and climate change for flood and dought decision flows. *Prerequisite:* CE 3713.

CE5753   **Engineering Hydrogeology**   **4 ch (3C 3L)**
                     (Cross-Listed: GE 5753)

Covers important topics in quantitative hydrogeology, including: principles of saturated and unsaturated groundwater flow, solutions to groundwater flow problems, well hydraulics and pumping tests, and contaminant migration and attenuation processes in groundwater. *Prerequisites:* CE 2113, CE 3713. Credit cannot be obtained for both CE 5753 and GE 5753.

CE5913   **Special Studies in Civil Engineering I**   **1 ch**

(See description for CE 5933).

CE5923   **Special Studies in Civil Engineering II**   **2 ch**

(See description for CE 5933).

CE5933   **Special Studies in Civil Engineering III**   **3 ch**

With the approval of the Department Chair and under the guidance of a member of the faculty, a student may perform special studies and investigations related to the undergraduate program. The extent of the work will determine the amount of credit. Students may receive credit(s) for one of CE 5913, CE 5923 and CE 5933 only. Restricted to students with at least 110 ch.

CE5963   **Research Thesis**   **6 ch**

The research thesis is an independent project conducted under the supervision of a faculty member over a period of two sequential semesters. Students are responsible for finding a supervisor and initiating the project. Suitable projects may include experimental investigations, field investigations, design projects, computational projects, software development or feasibility studies. Deliverables include a detailed proposal, periodic progress reports, a comprehensive dissertation and an oral presentation. Restricted to students with 100 ch completed and with a GPA of 3.3 in the previous assessment year or a CGPA of 3.3

CLASSICS AND ANCIENT HISTORY

Below are brief descriptions for the courses which deal with material in English translation.
Descriptions of Latin and Greek language courses can be found under the GREEK and LATIN courses
See beginning of Section H for abbreviations, course numbers and coding.

CLAS1323   **Discovering Ancient Civilization**   **3 ch (3C) [W]**

Through the lens of archaeology, students explore the sites, monuments, and artifacts of civilizations (in Mesopotamia, Anatolia, Egypt, the Indus Valley, Greece, Italy, and Roman Britain) that shaped Western society. The Tomb of King Midas, the pyramids of Egypt, the Greek theatre, and Roman amphitheater are among the topics covered. **NOTE**: Students cannot receive credit for both ARCH 1323 and CLAS 1323.

CLAS1403   **The Ancient Greeks:**   **3 ch (3C) [W]**
                     Gods, Heroes, Politicians and Poets

An introduction to ancient Greek civilization, including its history, religion, literature, art, architecture, and thought. Readings include selections in translation from timeless mythologies epics such as Homer's Odyssey and the first major prose work in the Western world, Herodotus' Histories. Lectures are supplemented with images of the achievements of the Greek Classical Age, such as Parthenon on the Athenian Acropolis and the Apollo from the temple of Zeus at Olympia.

CLAS1413   **The Romans:**   **3 ch (3C) [W]**
                     Gladiators and Senators, Engineers and Emperors

An introduction to ancient Roman civilization, including its history, religion, literature, art, architecture, and thought. Readings include selections in translation from tales of gods and heroes such as Vergil's Aeneid, and the autobiography of the great emperor Caesar Augustus, Lectures are supplemented with images of Rome's spectacular achievements, from the Colosseum and Pantheon in Rome to theatres and aqueducts from North Africa and the Middle East.

CLAS1503 Introduction to Mythology: The Gods and Heroes of   3 ch (3C)
                     Greece and Rome

A survey of the myths which helped to shape the life and thought of the classical civilizations of Greece and Rome. Emphasis will be placed on myths describing the gods and their powers, the beginnings of the world, the earliest humans, the tales of the heroes, and miraculous experiences in the lives of ordinary persons. Students who have successfully completed CLAS 3503 may not enrol in this course.

CLAS1703   Greek and Latin Roots of Scientific Terminology   3 ch (3C)

Designed for anyone with an interest in the origin of words, this course introduces the student to basic scientific terminology, especially that of the life sciences, through the Greek and Latin sources of these words. This

course aids in the understanding of these modern terms by exploring their basic meanings, the connections between these words, how they came to be created, and the rules that govern the formation of new terms.

CLAS2333 "To Dig is to Explore": Approaches to Classical Anthropology 3 ch (3C) [W]

This course includes a brief survey of the history of archaeological investigations and the scientific methods used in identifying and excavating a site and analyzing the material remains. Representative examples that illustrate the above scientific advances are drawn from major Mediterranean civilizations: Mesopotamian, Anatolian, Egyptian, Persian, Greek, Etruscan, and Roman. A lab component includes cataloguing 'ancient shards' from Greece and Turkey, and copies of Greek and Roman vessels. **NOTE**: Students cannot receive credit for both ARCH 2333 and CLAS 2333.

CLAS2643 Rome: The Eternal City I (O) 3 ch

An introduction to the history of Rome from ancient times to the Renaissance. Taught on location in Italy. Students may not receive credit for both CLAS 2643 and CLAS 3643. Travel costs not included in tutiton.

CLAS2645 Introduction to Spectacle in Ancient Rome (A) 3 ch (3C)

Introduces students to spectacle in Roman culture, from gladiatorial combat to political oratory, tragic theatre to comic farce, military triumph to erotic mime. Working with literary and archaeological sources, students will explore the many spaces in the city. (Colosseum, forum, circus, temples, even crossroads) where citizens, slaves, and foreigners gathered to see and be seen. Normally taught on location. Students cannot receive credit for both CLAS 2645 and CLAS 3943.

CLAS3003 Ancient History: The Greeks from the Trojan War to Alexander the Great (A) 3 ch (3C) [W]

A survey of Greek history from its beginnings in the Bronze Age to the empire forged by Alexander the Great. Topics include the era of the Trojan War and Mycenaean palaces, the origins of the world's first democracy, the Battle of Marathon and the Persian Wars, Pericles and the Athenian Golden Age, the Peloponnesian War and the clash of Athens and Sparta, and the rise of the Macedonian warlords, Phillip and his son Alexander. Special emphasis is placed on the enduring impact Greek history and Greek civilization have had on the modern world. Students cannot receive credit for both CLAS 3003 and CLAS 3013.

CLAS3023 Ancient History: Alexander and the Hellenistic World (O) 3 ch (3C) [W]

The social and political impact of Alexander the Great, his empire and his successors on the Mediterranean world, down to the Roman conquest.

CLAS3033 Ancient History: The Romans from Republic to Empire (A) 3 ch (3C) [W]

A survey of Roman history from its foundation to the fall of the Roman Empire in the west. Topics include Rome's mythological founding by Romulus and Remus, the age of the kings and the rise of the Republic, Rome's expansion to rule the Mediterranean, the violent transition from Republic to Empire under Julius Caesar and Caesar Augustus, the Pax Romana and the High Roman Empire, the Christianization of the Roman world under Constantine, and the fall of the Empire in the west. Special emphasis is placed on the enduring impact Roman history and Roman civilization have had on the modern world. Students cannot receive credit for both CLAS 3033 and CLAS 3043.

CLAS3053 The Roman Army 3 ch (3C) [W]

Examines the development of the Roman legions, from their beginnings a peasent conscript army to their imperial conquests and fame as a professional fighting force. Topics discussed include: organization, armament, strategy and logistics, social impact; the Roman navy, auxillary forces, and the legions' significance as a model for modern armies.

CLAS3063 Ancient Greek Warfare (O) 3 ch (3C) [W]

This course examines the history of warfare in the ancient Greek world, from the Bronze Age to the Hellenistic period and the rise of Rome. Topics include the development of military theory and practice through the eras of heroic combat, the hoplite phalanx and naval warfare, and the innovative armies of Alexander the Great and his successors; and the social and cultural factors of importance to ancient Greek military history.

CLAS3073 Ancient History: Jewish Civilization from the Babylonian Exile to the Great Revolt (A) 3 ch (3C) [W]

An examination of the social, cultural, intellectual and political history of the Jews during the period of the second temple (516 BCE - 70 CE).

CLAS3083 The Byzantine Empire 3 ch (3C) [W]

A historical analysis of Byzantine civilization from its emergence from the Late Roman Empire to its medieval zenith under Basil II (r. 976-1025). Topics include the development of a distinctive Byzantine culture, its

interaction with Western Europe, confrontation with Islam and its civilizing role in Eastern Europe.

CLAS3093 The Decline and Fall of the Roman Empire (A) 3 ch (3C) [W]

Traces the more important changes which overtook the Roman world from the late third to the seventh centuries AD. The course concentrates on the Roman experience at the court and in the provinces, and considers some of the dramatic upheavals that swept the empire in this period, which include the change of the principate into an autocracy, the intrusion of the government in to all aspects of life, the decline of the cities, the politicization of Christianity, and the loss of the western provinces.

CLAS3313 Field School in Classical Archaeology (O) 3 ch (3C) [W]

This course is an introduction to archaeological field techniques through participation in a field research project in the Classical lands. It introduces students to survey methods, excavation techniques, documentation/recording of field procedures, recovery of artifacts, and their preparation for storage.

CLAS3323 The Jewel of the East: The Art and Archaeology of Byzantium (A) 3 ch (3C) [W]

The eastern Roman empire, known today as Byzantium, flourished for over 1000 years (AD 324-1453). The art and architecture of this multicultural society, united under a single state religion, reflect contemporary political and religious attitudes. They tell the story of an evolving state that slowly drew away from Roman traditions to create its own identity. Clinging to its classical-Hellenic past through education, it laid a firm foundation for humanistic studies and the emergence of the Renaissance period. The surveying luxury items (jewelry, textiles, metalwork), the iconography (icons, wall paintings, and mosaics), the elegantly decorated books and illuminated manuscripts, the great basilicas and high-domed churches, most of which survive intact, are just some of the remains of material culture discussed. With the assistance of historical documents and anthropological and scientific studies, this course traces the story of this 'mystical' empire and its legacy to the development of western civilization.

CLAS3333 From Kingship to Democracy: The Art and Archaeology of Greece (A) 3 ch (3C) [W]

From prehistoric settlement to the great city states and from the monumental works and 'masterpieces' of art to the humble tomb and domestic pot, this course presents the material remains of a culture which continues to inspire artists, architects, engineers and city planners worldwide. The material is examined within a political, religious, and social context with the aid of historical documents, anthropological studies, and modern science. Topics include the contributions of eastern Mediterranean cultures (Egypt, Phoenicia, etc.), the development of the architectural orders (Doric, Ionic) and free-standing male and female sculpture, the ancient theatre, and the development of democracy as interpreted through the archaeological record are just some of the topics covered. Students cannot receive credit for both CLAS 2303 and CLAS 3333.

CLAS3334 Classical Archaeology: Method and Theory 3 ch (3C) [W]

In this course students examine the evolution of the discipline of classical archaeology and the scientific approaches to the study of material remains from the classical world: Mesopotamia, Anatolia, Egypt, Greece, Italy and Britain. A pottery lab component will complement this course. Students may receive credit for only one of the following courses: CLAS 2333, or ARCH 2333, or CLAS 3334.

CLAS3343 Archaeologies of the Roman Empire: Art, Landscapes and Memories (A) 3 ch (3C) [W]

The enduring monuments of Roman art, architecture, and engineering feats such as aqueducts and baths, still in use today, are a reminder of the ingenuity of a culture that has left its imprint on the modern world. With the aid of textual sources, anthropological studies, and the sciences, the course acknowledges and the cultures that inspired the Romans (the Hellenistic kingdoms of Alexander the Great and the Etruscans) and then examines the political agenda and building programs of the Republic and the emperors. Topics include Iron Age huts and the imperial palace of Domitian on Palatine Hill; the simple funerary monuments of the masses and the pompous display of statuary and monumental tombs of the wealthy; and grand temples, villas and amphitheaters (such as the Colosseum). Students cannot receive credit for both CLAS 2313 and CLAS 3343.

CLAS3373 Pompeii and Herculaneum (A) 3 ch (3C) [W]

Buried by volcanic eruption in 79 CE, Pompeii and Herculaneum are our richest source of evidence for daily life in the Roman Empire, from public buildings to private houses, from temples to taverns to brothels, from city streets to tombs, from sculpture and paintings to graffiti and bones. By studying the archaeological remains of these cities, students learn about

ancient Roman city structure, class and gender relations, political life, religious observances, hard work, and spectacular entertainment.

CLAS3403   The Comic Theatre of Greece and Rome (O)   3 ch (3C) [W]

The development of comedy from the kômos in Greece; the reading, in English translation, of an Old Comedy by Aristophanes, a satyr-play by Euripides and a New Comedy by Menander; the development of comedy in Rome through the reading of plays by Plautus and Terence. The history of the theatre, its changing structure, conventions, the production of plays and their performance and the festivals at which they were performed.

CLAS3413   The Tragic Theatre of Greece and Rome (A)   3 ch (3C) [W]

The history of the Theatre of Dionysus in Athens and a survey of the origins of Greek tragedy; the reading in English translation of a representative sample of the plays of Aeschylus, Sophocles and Euripides; the dramatic festivals at which they were performed, the production and performance of the plays, the dramatic conventions. The role of the serious theatre in Rome; a tragedy of Seneca, in English translation, is read.

CLAS3433   The Ancient World on Film (A)   3 ch (3C) [W]

The course aims to help students understand and enjoy the reception of Greek and Roman civilization in Hollywood and European films. History will be studied via cinematic versions (such as Troy, Alexander, Spartacus, Life of Brian, Fellini's Satyricon, Gladiator, etc.) and Greek and Latin literature in translation. Attention will be given to the ways in which filmmakers adapt historical subjects and how classical literature is recast as films, offering an exciting commentary on our relationship with our classical heritage. By introducing students to some of the literature and films about the ancient Greek and Roman worlds, it will encourage them to address questions of how they shape our views about the past. The focus will be on analyzing and discussing literature, film, and culture within a historical context.

CLAS3463   History of Modern Greece [O]   3 ch (3C) [W]
(Cross-Listed: HIST 3063)

An introductory survey course of the history of Modern Greece beginning with the Greek War of Independence in 1821 to World War II. Special attention will be paid to various events and themes (such as the Asia Minor Catastrophe in 1922 and the Greek Diaspora etc.) by utilizing literature and other historical sources and documentaries in order to present the society, culture and politics of Greece and gain a better understanding of the modern Greek identity. There are no *Prerequisites*.

CLAS3473   Introduction to Modern Greek Literature 3 ch (3C) [W] [O]

An introductory survey course of Modern Greek literature in translation. Emphasis will be placed on the history and development of literature from the 19th and 20th centuries by examining a selection of poetry, short stories and novel/s. Included in this survey are the Nobel prize winners George Seferis and Odysseas Elytis. There are no *Prerequisites*.

CLAS3483   Surfing the Aegean: Waves in Modern Greek 3 ch (3C) [W]

Surfing the Aegean is a holistic approach to modern Greek identity which seeks to dive beneath the surface of stereotypes and misconceptions to understand the real modern Greece. The course uses film, music and written and digital sources as well as hands-on activities to engage students to discover the cultural, historical, and social elements that form contemporary Greece.

CLAS3503   The Greek Gods and Their Cults (A)   3 ch (3C) [W]

The Greek myths of creation and the Greek gods and their mythology. The historical origins of the gods, the development of Greek religion from pre-historic times. Parallels are adduced from Middle Eastern mythologies. Major Greek religious sites are illustrated.

CLAS3513   The Trojan War: Myth and History (A)   3 ch (3C) [W]

Fought over the theft of a woman, the Trojan War has been a part of popular culture for 3000 years. It has been told and retold by poets since Homer, depicted in the arts of ancient Greece through the Middle Ages and Renaissance into modern times, sparked the romantic imaginations of early archaeologists, and most recently been interpreted on the screen in films such as Unforgiven and Troy. This course will explore the Trojan War through literature, historical texts, archaeology, the visual arts, drama and film.

CLAS3523   The Mythology and Religion of the Romans (A) 3 ch (3C) [W]

A study of the legends surrounding the foundation and growth of early Rome and of the Italian gods. Roman religion is studied under such headings as prayer, sacrifice, divination, the religious year and calendar, priests and emperor-worship. [Not open to students who received credit for CLAS 4023.]

CLAS3603   The Art and Architecture of Greece I (O)   3 ch [W]

A study of the art and architecture of Greece organized around visits to important archaeological sites and major museums in Greece. Travel costs not included in tuition.

CLAS3605   Ancient Athens (O)   3 ch [W]

A practical workshop introducing students to the Greek and Roman remains found at archaeological sites and museums in and around Athens. Taught on location. Travel costs not included in tuition.

CLAS3613   Mythology and Archaeology I (O)   3 ch [W]

The mythology and cults of the Greek gods, seen in the context of the archaeological remains of some of their major cult centres, and the Mycenaean origins of the sagas of the Greek heroes from the focus of this course. Travel costs not included in tuition.

CLAS3623   Remembering War in Ancient Greece (O)   3 ch [W]

A course taught on location in Greece that considers the phenomenon of ancient Greek warfare through onsite investigation of the topography and archaeology of several important battlefields and fortifications within central and southern Greece, as well as the art-historical and material evidence of warfare and its commemoration on display in Greek museums. In addition to reconstructing the context and events of key battles, this course considers how the realities of the battlefield and the commemoration of warfare on physical monuments shed light on ancient Greek politics, society, and culture.

CLAS3633   The Art and Architecture of Imperial Rome   3 ch [W]

A study of the art and architecture of Classical Rome organized around visits to important monuments, archaeological sites and museums in Italy. Travel costs not included in tuition.

CLAS3643   Rome: from Ancient Times to the Renaissance (O)   3 ch

A study of the ancient and medieval history of the city of Rome, through the on-site examination of the material remains. Students may not receive credit for both CLAS 2643 and 3643. Travel costs not included in tuition.

CLAS3653   Mythology and Archaeology II (O)   3 ch [W]

Directed study of selected topics in the mythology and cults of the Greek gods undertaken through the study of the archaeological remains of major cult centres in Greece. Travel costs not included in tuition.

CLAS3663   Religion in Ancient Rome (O)   3 ch [W]

A study of religion in Rome from its pagan origins to the Rise of Christianity in the late Empire, based on first-hand examination in Rome of temples, altars, churches, sculpture, inscriptions and other materials on site an in museums.Travel costs not included in tution.

CLAS3673 Ancient Cities and Civilizations of Western Turkey: 3 ch [W]
Myth, Cult and Ancient History (O)

A study of this history and civilizations of western Asia Minor, in particular the Hittite, Lydian and Graeco-Roman. Myth, cult and history are introduced in varying degrees as appropriate to the various sites visited during the tour. Particular attention is paid to the Greelk cities of the Aegean coast, their sanctuaries, public buildings and theatres. Travel costs not included in tuition.

CLAS3683   The Art and Architecture of Asia Minor: 3 ch [W]
Hellenistic, Roman, and Early Christian

A survey of the art and architecture of Asia Minor, organized around visits to important archaeological sites and major museums in Turkey, and studying selected remains from the Hellenistic, Roman and early Christian periods, including sculpture, temple architecture, and examples of the early Christan basilica. Travel costs not included in tuition.

CLAS3693   Roman Britain (O)   3 ch [W]

A study of ancient Roman presence in Britain based on firsthand examination of Roman remain, including visits to Roman cities, villa and bath complexes, museum collections in London elsewhere, Hadrian's Wall and other military instillations. Travel costs not included in tuition.

CLAS3703   Socrates and the Intellectual World of   3 ch (3C/S) [W]
Classical Athens (O)

Examines the central intellectual, political, religious and social controversies of the Golden Age of Greece (450-350 BC), by focusing on Socrates in conflict with the citizens of Athens, the writers of comic theatre, and the new professional teachers, the "Sophists."

CLAS3723   Ancient Science (A)   3 ch (3C) [W]

An examination of the development of scientific theory and practice among the ancient Greeks and Romans.

CLAS3733   Ancient Philosophers (A)   3 ch (3C) [W]

A survey of the various forms of philosophical literature produced in the classical civilizations of Greece and Rome.

CLAS3803   The World of Jesus (O)   3 ch (3C) [W]

Examines the social, literary, philosophical, and religious milieu of Judea in the time of Jesus.

CLAS3813   The Early Church (A)   3 ch (3C) [W]

The history of Christianity from the apostles to the fifth century: its organization and doctrinal development, and its interaction with Roman civil authority and paganism.

CLAS3913   Gender and Power in Ancient (O)   3 ch (3C) [W]
                     Greece and Rome

By investigating interactions between gender and power in ancient Greece and Rome, this course delves into the social norms and taboos that shaped public and private life in the great cities of antiquity. Drawing on modern theoretical writings as well as ancient texts and images, students investigate ideals of feminity and masculinity in the ancient mythology and public ritual; the gendering of public and private space; licit an illicit sexual practices; love, marriage, adultery and prostitution; and gendered narratives of good and bad politicians, emperors, and those perceived to be "barbarians."

CLAS3923   Roman Law (A)   3 ch (3C) [W]

A survey of the development and practice of the Roman legal system, upon which all modern civil law systems are based. Topics include: sources of Roman law and legal institutions; legal procedure; Roman legal concepts (persons, property, obligations, succession); equity and social change in legal reform; survival and modern revival.

CLAS3943   Spectacle in Ancient Rome (A)   3 ch (3C) [W]

This course examines the importance of spectacle in Roman culture, from gladiatorial combat to political oratory, tragic theatre to comic farce, military triumph to erotic mime. Working with literary and archaeological sources, students explore the many spaces in the city (Colosseum, forum, circus, temples, even crossroads) where citizens, slaves, and foreigners gathered to see and be seen. Students will be expected to complete a research assignment when they return from Rome. Normally taught on location. Students cannot receive credit for both CLAS 2645 and CLAS 3943.

CLAS3953   Ancient World, Modern Issues (O)   3 ch (3C) [W]

This course explores ancient variations on an issue facing contemporary society, with special attention paid to how the legacies of Greece and Rome continue to shape our world for better and for worse. Possible topics include imperialism and colonialism; democracy, demagogues, and populism; racism and slavery; and mass migration and refugees.

CLAS4063   Cesar Augustus: 3 ch (3C) [W]
                  Architect of the Roman Empire (A)

A seminar dealing with the controversial career of Caesar Augustus, from his unexpected rise to power to his establishment of the Imperial system of government at Rome, through systematic analysis of the primary sources, using the Res Gestae, Augustus' own public statement of his achievements, as a starting point. *Prerequisite:* 60 ch, or permission of the instructor.

CLAS4303   Exploring Ancient Athens (A)   3 ch (3S) [W]

This course traces the birth, development, and eventual decline of one of the most important city states of Greek antiquity: Athens and its environs. By exploring the archaeological and written records, students work towards an understanding of the topography and monuments of the area from the Bronze Age to Late Antiquity.

CLAS4313   Exploring Ancient Rome (A)   3 ch (3S) [W]

This course traces Rome's growth from a cluster of mud huts on a hilltop into one of the most magnificent cities the world has ever known. Working with archaeological and written records, students explore the topography and a monuments of the eternal city from the Iron Age to Late Antiquity. Special attention is paid to questions of ideology and cultural memory. What ideas about Roman history, and identity were built into the city's monumental landscape? Who had the power to shape this landscape, and how did they use it to reshape Roman ideas about the past, present, and the future of the city.

CLAS4333   Living in the Ancient World: 3 ch (3C) [W]
                Greek and Roman Housing (A)

This course focuses on Greek and Roman dwellings from a socio-historical, archaeological, and anthropological perspective. Students will examine domestic plans, interior decoration (mosaic pavements, wall paintings, sculptural adornment, etc.) household contents, and ancient literary records in order to explore the religious beliefs of the occupants, the social dynamics of family organization (women, children, and slaves), and the role of the household within the private and public spheres.

CLAS4353   Greek Sculpture (A)   3 ch (3C) [W]

This course examines Greek sculpture, free-standing and relief, from the Archaic period through the Classical and Hellenistic. Special emphasis will be placed on the development of the human form and the representation of pose, as well as the problems of pedimental construction. Material from contemporary arts, such as pottery, will also be used to illustrate the course. *Prerequisites:* 60 ch, or permission of the instructor.

CLAS4363   Roman Sculpture (A)   3 ch (3CS) [W]

This course looks at free-standing and monumental sculpture of Ancient Rome, both as an art form and as a socio-political phenomenon. Special attention is paid to imperial portraiture and questions of ideology in both the public and private realms. *Prerequisites:* 60 ch or permission of the instructor.

CLAS4403   Classics/Classical Studies Honours   3 ch (3CS) [W]
                Capstone Course (A)

This seminar course explores a specific Classical theme from a variety of perspectives, combining archaeological, literary, and historical approaches to the ancient world. Students undertake a major research project leading to a final paper and public presentation. Possible topics include political and cultural "Golden Ages"; democracies and republics; cross-cultural exchange in ancient Mediterranian; and war and peace. This course is normally required for all Classics/ Classical Studies Honours students, and is strongly recommended for Majors. Open to students who have completed at least 60 credit hours.

CLAS5003   Directed Studies in Classics   3 ch (3C) [W]

A detailed study of a specific area of Classical Studies. Uses primary sources (in translation) to illuminate the chosen topic. *Prerequisites:* Permission of the instructor.

CLAS5013   Topics in Classical Archaeology   3 ch (3C) [W]

Students are introduced to various research methods and skills in Classical Archaeology by working in groups on a specific time period (Bronze Age, Classical, or Hellenistic periods), developing individual projects in consultation with the instructor, and delivering in-class presentations. *Prerequisite:* permission of the instructor.

COMPARATIVE CULTURAL STUDIES

See beginning of Section H for abbreviations, course numbers and coding.

CCS1014   The Culture of Spain and Latin America II (O)   3 ch (3C) [W]

Spain and Latin America after 1500: art, literature, music and society. A multimedia approach will be used. Conducted in English. Open to students of all years. No Prerequisites. Students who have taken WLCS 1014 or SPAN 1014 may not attain credit for CCS 1014.

CCS1021   Introduction to Culture, Arts, and Media   3 ch (3C) [W]
                (Cross-Listed: MAAC 1021)

An interdisciplinary exploration of the pivotal role which culture, media, and the arts play in shaping understandings of the world around us. By considering a variety of cultural expressions, creative and artistic practices, and media representations, both old and new, from around the globe, this introductory course invites students to open up to new ways of thinking about how culture is created and continually contested, and is ultimately central to how we experience our lives. Required for CCS Majors and Honours students.

CCS1023   Sex, God and War: An Introduction to   3 ch (3C) [W]
                Pre-Modern World Literature

A study of major texts (in English translation) of world literature written before 1900. Authors, texts and literatures studied will vary but may include The Bible, Dante, Omar Khayam, Lope de Vega, Goethe, Strindberg, Mickiewicz, and Dostoevsky. Conducted in English. Open to students of all years. No Prerequisites. Students who have taken WLCS 1001 may not attain credit for CCS 1023.

CCS1043   Russian Culture I (O)   3 ch (3C) [W]

Significant aspects of Russian culture from the 10th to the end of the 19th century. Topics include Russian Icon Painting and Architecture, Russian

culture between Europe and Asia; Ivan the Terrible as cultural type; women in Russian culture; serfdom and slavery; Russia's contribution to the development of terrorism and revolution; the reforms of Peter the Great; Russian Orthodoxy, etc. Conducted in English. Open to students of all years. Students who have taken WLCS 1043, or RUSS 1043 may not attain credit for CCS 1043.

CCS1073   Insights into Chinese Culture I (O)   3 ch (3C)

An introduction to China's long and rich cultural heritage with a focus on how it is embedded in living examples. Students who have taken WLCS 1073 may not attain credit for CCS 1073. No prerequisites.

CCS1076   Food Culture in Germany (O)   3 ch (3C) [O]

Offers insights on food as window to German culture and explores the country's food by region through political, cultural, and historical lenses. Students stufy national cuisine through questions of tradition, adaptation, and the migration of cultures as well as hands-on cooking exercises. Topics include gastronomy and drink customs in everyday life, and on special occaisions, food-related inventions, media representations, influences from other cusines, organic foods, vegetarianism and veganism.

CCS2019   Fairy tales, Folktales, Legends and Lays (A)   3 ch (3C) (A) [W]

This course offers an introduction to German folklore, folkloric literature, and Germanic mythology. It considers informal cultural traditions (customs, music, crafts, etc.) and literary traditions such as folk and fairy tales, legends, and heroic poems. Students interpret folklore and folkloric literature and explore their socio-cultural function and significance. Particular attention will be paid to the enduring prevalence of the fairy tale: we will examine themes such as abandoned children, the power of love, facing fear, and more. Further topics for discussion include gender stereotypes, value systems, the presence of violence, variations of fairy tales, adaptations on stage an in film, television, and digital media, and the influence of fairy tales on the genre fantasy, and on videogames. Possible works include *Till Eulenspiegel, Piper of Hamlen, Grimm's fairy tales, Andersen's fairy tales, The Lay of Hildebrand, The Nibelungenlied, The Never-ending Story.* The course is offered in English and is open to students of all years. No Prerequisites. Students who have taken GER 3019 or WLCS 3019 may not obtain credit for CCS 2019.

CCS2021   Popular Culture (Cross-Listed: MAAC 2021)   3 ch (3C) [W]

This course introduces historical and theoretical contexts for the study of mass-mediated popular culture, from movies and TV to comic books and video games. It also explores the reciprocal relationship between creative expression and economic constraints, between the mainstream, sub-cultures, and counter-cultures, as well as familiar designations of "high-brow" and "low-brow." Using specific media case studies, students will engage with contemporary debates about the impact of representations, the role of ideology, the agency of the audience, the meaning of fandom, and the politics of taste. While learning to analyze and evaluate their relative merits, students will learn to step back and think critically about the larger implications and the cumulative effects of our constant exposure to popular culture texts. Students who have taken MAAC 2021 may not attain credit for CCS 2021.

**CCS2023   Modernity, Eternity, and Culture in Collision: 3 ch (3C) [W]
An Introduction to 20ᵗʰ-Century World Literature**

A study of major modernist and contemporary texts of world literature (in English translation). Authors, texts and literatures studied will vary but may include, Milosz, Brecht, Ionesco, Camus, Marquez, Kafka and Pasternak. Conducted in English. Open to students of all years. No prerequisites. Students who have taken WLCS 1002 may not attain credit for CCS 2023.

**CCS2024   Culture and Dance I: 3 ch (3C)
So You Think You Know Dance (C) (O)**

An investigation of the development of Classical Ballet and Contemporary / Modern dance styles from Renaissance court dances to present day choreography. Emphasis will be on European and North American theatrical dance traditions. Types of dance explored may include court dances, classical ballet, modern and contemporary dance, jazz dance and improvisational dance. Students will examine the cultural connections among the art of dance, music, visual arts, history, literature and other fields. When possible, the class will be coordinated with dance performances at the Fredericton Playhouse and students may be expected to attend up to 2 such performances. The course will include both academic work and experiential dance/movement components. No previous dance background necessary. Students who have taken WLCS 2024 may not attain credit for CCS 2024.

**CCS2025   Culture and Dance II: (C) (O)   3 ch (3C)
Dance In The Global Village**

This course is an investigation of the universal language of dance in both theory and practice. Topics will be chosen from a diversity of both folk-

dance traditions and classical theatrical dance traditions from around the world. These may include the fundamental components of dance technique, a variety of international folk dances, social dance (tango and salsa, for example) East Indian classical dance forms, etc. When possible, the class will be coordinated with dance performances at the Fredericton Playhouse and students may be expected to attend up to 2 such performances. The course will include both academic work and experiential dance/movement components. No previous dance background necessary. Students who have taken WLCS 2025 may not attain credit for CCS 2025.

**CCS 2666   Celebrity and Mass Media in Latin America (O) 3 ch (3C) [W]
(Cross-Listed: MAAC 2666)**

This course will explore the cultural impact of the selected Latin American personalities that have had a significant influence on the notions of identity in Argentina, Colombia, Cuba, Mexico and Venezuela. We will study the personalities of Eva Peron, Pablo Escobar, Che Guevara, Frida Kahlo, Selena and Hugo Chavez through film, music, literature, print media, the Internet and television series. Students will also examine the impact of the public figures' death both at the local and the international level. Students who have taken CCS 3555 may not obtain credit for CCS 2666 or MAAC 2666.

**CCS3003   Contemporary Issues in   3 ch (3S) [W]
Comparative Cultural Studies**

A seminar with varying content addressing literary and cultural periods, genres or themes as expressed across cultural borders. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor. Students who have taken WLCS 3003 may not attain credit for CCS 3003.

CCS3011   Dreams, Desire, Delusion: Romanticism   3 ch (3C) [W]

Romanticism is the first literary movement that crosses all European borders--from Russia to England--and filters into the New World. This course studies the major concepts and themes of Romanticism, including Napoleonism, idealism, individualism, nationalism, irony, the poet as genius, etc., in the works of German, Russian, Polish, Spanish, Latin American, and other writers. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor. Students who have taken WLCS 3011 may not attain credit for CCS 3011.

CCS3014   Latin America Before 1500   3 ch (3C) [W]

A survey of pre-Hispanic civilizations of Latin America. Films and other audio-visual materials will be used. This course is also listed under International Development Studies (IDS). Open to students of all years. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who have taken WLCS 3014, or SPAN 3014 may not attain credit for CCS 3014.

**CCS3021   Culture Matters: Critical Approaches to   3 ch (3C) [W]
Studying Culture (Cross-Listed: MAAC 3021)**

Offers critical interdisciplinary approaches to understanding culture through examination of key concepts, theories and practices in the field of Cultural Studies. Required for CCS and MAAC Majors and Honours students.

CCS 3022   Imperial Vienna (O) (Cross-Listed: MUS 3022) 3 ch (3C) [W]

An exploration of Vienna through its musical heritage and contemporary musical culture. Composers such as Mozart, Haydn, Beethoven and Schubert all made their home in Vienna and wrote some of the most memorable and influential music known. Drawing on the city's history, art and architecture over three centuries, we will examine Vienna's role in the development of Classicism, Romanticism and Nationalism in music history. We will also consider the current music scene in Vienna as present in Jazz and pop festivals, street performances and events. The course will include concerts in historic halls, visits to museums/galleries, and walking tours in the Old City. Taught on location as part of the Travel Study program Vienna.

**CCS3023   Lost and Found in Translation: 3 ch (3C) [W]
Comparative Cultural Studies**

This interdisciplinary course allows students to develop their understanding of key frameworks for comparative cultural studies while considering how we can compare cultures from around the globe by studying their creative, linguistic, and artistic expressions. Required for CCS and MAAC Majors and Honours students.

CCS3024   Brecht and Theatre (O)   3 ch (3C) [W]

This course offers an in-depth study of the life and the dramatic works of 20th-Century German playwright Bertolt Brecht as well as an exploration of the mechanics of theatre itself. Students will be introduced to the concept of epic theatre, and to aspects of performance and audience

studies. They will also discuss the dramatic texts. Readings may include The Threepenny Opera, Life of Galileo, The Good Person of Szechuan, Mother Courage and Her Children, and The Caucasian Chalk Circle. Texts are read in English translation. There will be opportunities to read out and, if desired, act out selected scenes. No previous experience with drama required. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students with credit for GER/WLCS 4033 may not take this course for credit. Students who have taken WLCS 3024, or GER 3024 may not attain credit for CCS 3024.

CCS3025   Berlin Now: Building the Modern City (O)   3 ch (3C) [W]

This course aims to explore the Berlin's multi-facetted identity as a city, once divided by a wall, now renowned as a cultural capital with eclectic energy. Using the city as a workshop, we will examine Berlin's architecture during Imperial Germany, learn about film history and modern art during Weimar Republic, and engage with contemporary art and street art. We will follow traces of Nazi and Cold War period on the urban landscape to conclude with considerations of post-modern architecture. Investigating how the tension between the past and the present materializes we will approach concepts such as memory culture and critical reconstruction. Students will understand and appreciate the role of architecture and art, multi-cultural communities, including a reviving Jewish community, and both public and counter culture in building modern Berlin. Taught on location as part of the Travel-study program Berlin. Students who have GER3025 and WLCS 3025 may not obtain credit for CCS 3025.

**CCS3045   Decadence, Nazis and the War: 3 ch (3C) [W]
                Twentieth-Century German Literature until 1945**

Introduces students to some of the major figures and trends in twentieth-century German literature to the end of World War II. Examines different types of prose narratives, drama, and poetry in the context of the main intellectual, social, and political forces and concerns of the period. Conducted in English. Texts are read in English translation. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students who have taken WLCS 3045, or GER 3045 may not attain credit for CCS 3045.

**CCS3054   Crimes and Misdemeanors: 3 ch (3C) [W]
                Modern German Literature**

An investigation of the themes of crime, murder, and justice in selected literary texts ranging from the late 18th to the 20th century. Prior and parallel to the emergence of the genre of crime fiction, authors have concerned themselves with the portrayal of crime, guilt, redemption, and forgiveness as expression of the ambivalence between man, woman and our world, the frailty of fortune and security, as well as the power of obsession and evil. We will closely read texts, discuss the ensuing moral, ethical, and philosophical questions, and explore how authors use crime fiction to either assert or question moral value systems. Emphasis will be placed on textual analysis and situating the texts in their literary historical context. Includes texts from various genres including film, and literary periods. Authors studied may include: Goethe, E. T. A. Hoffmann, Droste Hülshoff, Büchner, Kaiser, Brecht, Süskind, Arjouni, and Dürrenmatt. Conducted in English. Texts are read in English translation. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students who have taken WLCS 3054, or GER 3054 may not attain credit for CCS 3054.

**CCS3055   Rubble, Revolt, Reunification: 3 ch (3C) [W]
                Twentieth-Century German Literature after WW II**

Introduces students to some of the major figures and trends in twentieth-century German literature, covering the period from the end of World War II to Germany's reunification. Different types of prose narratives, drama, and poetry are examined and discussed in the context of the main intellectual, social, and political forces and concerns of the period. Conducted in English. Texts are read in English translation. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students who have taken WLCS 3055, or GER 3055 may not attain credit for CCS 3055.

**CCS3056   Queer Media and Culture (A):   3 ch (3S) [W]
                (Cross-Listing: MAAC 3056)**

Explore how queer identities are shaped, performed, and represented across media and cultures. Learn how lesbian, gay, bisexual, trans, intersex, asexual, two spirit, queer and questioning people have been represented and have represented themselves across various media in reent decades in the Canadian and international contexts. Examine how queer theory works to disrupt traditional notions of gender, sex, sexuality, pleasure, and bodies, and what this means for queer community making.

**CCS3061   From People to a Nation: 3 ch (3C) [W]
                        German Culture before 1900**

A survey of German civilization from the time of early European tribal migrations to the rise of nationalism in the nineteenth century. Taking a sociohistorical perspective, students will be acquainted with a selection of key developments within the German-speaking cultures, including aspects of history, literature, music, architecture, and painting. Assigned readings, lectures, and slide shows aim at raising an awareness of the interrelationship between cultural heritage, historical and political developments, and artistic expression. Conducted in English. Open to students of all years. No prerequisites. Restriction: Credit may not be obtained for both CCS 1061 and CCS 3061. Students who have taken WLCS 3061, or GER 3061 may not attain credit for CCS 3061.

**CCS3062   Love and Religion: Latin American and   3 ch (3C)
Caribbean Women's Narrative from the Golden Age to the Beginning of the
                        20th Century (A)**

A survey of selected readings of Latin American women writers from the Golden Age to the present. We examine works of Sor Juana Inés de la Cruz, Gertrudis Gómez de la Avellaneda, Alfonsina Storni, Gabriela Mistral, Luisa Valenzuela, Isabel Allende, among others, from a socio-historical perspective. The course will explore the social conditions of the women in Latin America, issues of women's identity and gender construction. A multimedia approach will be used. The course will be offered in English and is open to students who have completed at least 30 credit hours of university work. Students who have taken WLCS 3062, or SPAN 3062 may not attain credit for CCS 3062.

CCS3063   Literature of the Holocaust (O)   3 ch (3C)

Addresses questions on a selection of literary and film responses to the Holocaust in various cultures and genres. Includes the perspectives of Jewish and non-Jewish survivors, children of survivors and others more removed. Particular attention is paid to the ethical and aesthetic challenges the Holocaust poses. Topics include: victims and oppressors, and the role of stereotypes in their depictions; the possibilities and limitations of language to express unimaginable horrors; and the role and appropriateness of literature as medium to respond to the historical, cultural, and psychological complexities of the Holocaust. Texts are read in English translation. No prerequisites. Students who have taken WLCS 3063, or GER 3063 may not attain credit for CCS 3063.

**CCS3064   The Holocaust: East European Representations   3 ch (3C) [W]
                        and Responses (O)**

The Holocaust was a powerfully defining experience, historically and culturally, for most of the nations and peoples of Eastern Europe. This course examines key aspects of its impact and repercussions, how it has been represented and responded to, primarily in Literature, Memoir, and Film, but also in other cultural areas such as memorial construction and music. The complex notions of victim, perpetrator, bystander, survivor, trauma, martyrdom, memory and identity receive their most expressive and compelling formulations precisely in these kinds of texts. The geographic focus of the course is on Poland, Ukraine, Lithuania and Russia, but reference will also be made to other areas such as Czech Republic, Hungary, and Romania. Authors, directors, etc., to be studied may include Borowski, Grynberg, Szymborska, Fink, Gross, Wajda, Polanski (Poland); Meras (Lithuania); Grossman, Yevtushenko, Shostakovich (Russia and Ukraine); Kertesz (Hungary); Hrebejk (Czech); etc. The course and all readings are in English. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students who have taken WLCS 3064, or GER 3064 may not attain credit for CCS 3064.

**CCS3065   The Thrill of Fear: Horror Narratives Across   3 ch (3C) [W]
        Media & Cultures [A] (Cross-Listed: MAAC 3065)**

Why have people in so many times and places enjoyed spooky stories? What, if any, value can we assign to tales of horror and the supernatural? Do ghost stories and monster movies differ across nations and cultures? Questions like these will guide our global study of gothic, horror and supernatural texts chosen from a wide array of media, from literature and cinema, to television, comic books, and video games. Topics may include visual culture and the sublime, Freud's notion of "the uncanny," Jungian archetypes, gender identity, conceptions of ritual and myth, the modern and the postmodern, subcultures, folklore, religion and secularization. This course is open to students who have completed at least 45 credit hours at university level. Attendance at additional scheduled film screenings outside of lectures will be required. Students who have already completed MM 3065 for credit may not enrol in MAAC 3065. Students who have taken WLCS 3065 may not attain credit for CCS 3065.

**CCS3066 Trauma and Seduction: Early German Cinema (A) 3 ch (3C) [W]
                (Cross-Listed: FILM 3066, MAAC 3066)**

Beginning with the earliest silent movies and concluding with National Socialist propaganda films, this course offers an introduction to a prolific and important era in German film history: the Weimar Republic and pre-WWII period, 1918-1939. Our discussions will situate the films within

larger political and cultural discourses. Emphasis will be placed on such topics as the cinematic response to the trauma of WWI; German national identity; expressionism and modernity; the politics of gender and sexuality; the impact of sound on film aesthetics; the relationship between cinema and other media; the ethics of film production. Films to be studied include features by directors such as Lang, Lubitsch, Murnau, Pabst, Riefenstahl, Sagan, von Sternberg and Wiene. In English. **NOTE:** Students can obtain credit for only *one* of GER 3066, WLCS 3066, CCS 3066, FILM 3066, and MAAC 3066.

CCS3071   Germany Today: German Culture from   3 ch (3C) [W]
1900 to Present

Significant aspects of German culture from the beginning of the industrial revolution to the end of the 20th century. Topics will vary, but may include: German Impressionism and Expressionism, Early German Film, the Women's Movement, Early German Homosexual Rights Movement, Weimar Culture, Nazi Art, Literature after 1945, Divided and Re-unified Germany, New German Film, and others. Conducted in English. Open to students of all years. No prerequisites. Restriction: Credit may not be obtained for both CCS 1071 and CCS 3071. Students who have taken WLCS 3071, or GER 3071 may not attain credit for CCS 3071.

CCS3072   Contemporary German Cinema and Media (O)   3 ch (3C) [W]
(Cross-Listed: FILM 3072, MAAC 3072)

This course covers recent German cinema and media with a focus on acclaimed productions by new directors for film, television, and streaming platforms. The creative work of women directors, themes of gender, subjectivity, and intimacy are especially highlighted. Other topics include: The Berlin School and its visual and narrative style, the continued preoccupation of filmmakers with the nation's past, comedy and satire in Germany, and the influence of the 1970s (the feminist film movement, the new German Cinema, etc), on the new generation. *Prerequisites:* Open to students who have completed at least 30 ch of university courses or by permission of the instructor. **NOTE:** Students can obtain credit for only *one* of GER 3072, WLCS 3072, CCS 3072, CCS 3074, FILM 3072, and MAAC 3072.

CCS3073   From Castles to Graffiti: Mediating   3 ch [W]
German Culture (O)

Explores the culture and creative industries of modern Germany. Students are introduced to Germany's media landscape, cultural and educational institutions, cultural trade fairs (books, arts, Interior design), film, music and theatre festivals. They discover and crtiically reflect on official and unofficial forms of knowledge distribution, cultural programming and mediation. The course also challeneges students to trace cultural values as they engage with multiculturalism, cultural diplomacy, memory culture, environmental movements, sports and wellness, and cultural tourism, as present in Germany. **NOTE:** Students who have taken CCS 2073 may not obtain credit for CCS 3073.

CCS3082   History of Canadian Cinema (A)   3 ch (3C) [W]
(Cross-Listed: MAAC 3082 & FILM 3082)

Focuses on the first half-century of filmmaking in Canada and the nation's long struggle to develop and sustain a functioning film industry in the shadow of Hollywood. Readings and screenings trace the history of the movies in Canada from the silent era to the 1970s. Issues raised may include Canadian/American relations, national and regional identities, tensions between art and entertainment, media and cultural policy, representation of race, class, gender, and relation of Canadian film to other media (TV, radio, video) and other arts (painting, music, literature) in Canada. Open to students who have completed 45 credit hours, or with permission of the instructor. Students who have taken WLCS 3082 may not attain credit for CCS 3082.

CCS3113   Social Symbols in Latin American Literature   3 ch (3C) [W]

Examines literary characters as social symbols that reflect socio-political realities in selected translated works. Social and historical documents as well as videos and films will be used for purposes of comparison. Students who take this course to fulfill Majors or Honours requirements, will be required to write their papers in Spanish. This course is also listed under International Development Studies (IDS). The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who have taken WLCS 3113, or SPAN 3113 may not attain credit for CCS 3113.

CCS3121   The New Berlin: Memory and Reinvention (O)   3 ch (3C) [W]

The course explores the role of memory and cultural policy in the process of renewal which encompassed Berlin with an extraordinary surge of creativity and reconstruction after Germany's reunification. Students will study Berlin's cultural topography, examine the physical face of the city as well as living environment of its population, and investigate how places and spaces embody and narrate a story of national pasts and future. What does it mean to be German? How is history remembered or forgotten? What role do literature, film, images, media, and objects play in the

practice and politics of cultural memory and cultural creation and branding? We will focus on manifestations of culture including subculture, in literature, film, architecture, memorials, museums, city design, and neighbourhoods. Topics may include: Walter Benjamin, Franz Kafka, Christa Wolf, Walther Ruttmann, Rainer Werner, Fassbinder, Wim Wenders; the Brandenburg Gate, the memorialisation of the Holocaust, remnants of the GDR, Europe and Berlin, immigration and multiculturalism, Kreuzberg, Jewish culture, gay culture, music culture, youth culture. Students will be introduced to theories and methodologies of memory culture research and will carry out case studies. They can expect to obtain an understanding of the transhistorical and transcultural significance of Berlin. Students who have taken WLCS 3021, or GER 3021 may not attain credit for CCS 3121.

CCS3122   New York Modern (O)   3 ch [W]

A study of modern art and modernism in New York from its development as an urban centre from the late nineteenth through the first half of the twentieth century. This course makes use of cultural and artistic sources available in contemporary New York City. Students will explore visual art as well as performing arts, including modern dance, and modern music and/or experimental film and will become acquainted with ideas, aesthetic practices, and key representatives of various international art movements such as art nouveau, expressionism, Dada, futurism, cubism, primitivism, and surrealism. The course features museum visits (Neue Galerie, MoMa, Metropolitan, Whitney, and the Guggenheim), walking tours, a performance (theatre, dance, or concert), and assignments that foster art appreciation and critical reflection of the role of museums and patronage, public art and street art, and the continuation and transformation of modernism in New York today. Normally offered on site. Students who have taken WLCS 3022 may not attain credit for CCS3122.

CCS3123   Berlin to Broadway: Musical Theatre Across   3 ch (3C) [W]
the Oceans (Cross-Listed: MUS 3123)

An examination of the life and work of Kurt Weill focusing on his contribution to the theatre culture of Berlin in the twenties and to Broadway in the forties. We will read selected stage works by Weill and his renowned literary collaborators such as B. Brecht, W. Anderson and I. Gershwin, discuss their social relevance, theatrical power, and reception and explore the interplay between the various media: text, music and stage. Emphasis will be placed on the urban cultural context of Berlin, and the history of musical theatre and Broadway musical genres, including current trends. The goal of the course is to provide students with the opportunity to study a theatre composer in depth, to foster a critical appreciation of Weill's unique place in music theatre, and to enrich their understanding of material, cultural and performative aspects of musical theatre. Stage works by Weill may include *The Threepenny Opera, Happy End, The Rise and Fall of the City of Mahagonny, Lady in the Dark, Street Scene, Lost in the Stars*. Other musicals to be discussed may include *Cabaret, Guys and Dolls, Sweeney Todd, In the Woods*. The course and all readings are in English. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students with credit in GER 4033 may not take this course for credit. Students who have taken WLCS 3023, or GER 3023 may not attain credit for CCS 3123.

CCS3211   Mobility, Media and Art (O)   3 ch (3C) [W]
(Cross-Listed: MAAC3211)

This course considers how artists, filmmakers, and writers use mobile media to create various forms of art, including cellphilms, soundwalks, and micro-blog. In general, mobile media art takes art of the gallery, cinema, and city and puts it into our pockets, public spaces, and rural environments. Drawing on the mobilities paradigm, we examine how mobile media artists working in screen, digital, and game spaces challenge usual forms of participation, interactivity, and accessibility. We will also analyze different mobile media art projects within and outside of the classroom, which may include cellphilms, mobile phone orchestras, soundwalks, and/or soundscapes. Students have the option of creating a cellphilm or soundwalk for their final project.

CCS3405   Media & Environment (O)   3 ch (3C)[W]
(Cross-Listed: MAAC3405)

This course introduces students to the literature of environmental media studies. The media landscape, from television to video games, has a profound role in shaping how we think about nature, the wilderness, and the environment. The news and social media are also important sources of information about environmental issues. In addition to being crucial sources of information, however, the media create many environmental problems, such as e-waste and carbon emissions. This course reflects on the production, distribution, and associated waste of digital media alongside its role in representing the environment and environmental problems. Teaching methods include leactures and seminars. Students

have the option of creating an environmental media project, e.g. a media campaign or short documentary, for their final project.

CCS3431   **Global Media, Politics, and Power (O)**   **3 ch (3C) [W]**
               (Cross-Listed: MAAC 3431)

Uses core readings and theoretical frameworks from media studies to examine the complex relationships between media, society and politics, across the 20th century and into the new millennium, and in global perspective. Topics include media ownership and regulation; media and social movements; censorship and freedom of the press; television and digital culture in emerging democracies; the politics of the popular; media arts & activism.

CCS3455   **Latin American Cinema (O)**   **3 ch (3C)**

This course will provide students with a background in Latin American cinema, emphasizing the most productive centres such as Mexico (Paul Leduc, María Novaro, Alejandro González Iñárritu, Guillermo Del Toro), Cuba (Tomás Gutiérrez Alea, Sara Gómez, Fernando Pérez), Brazil (Walter Salles, Hector Babenco) and Argentina (María Luisa Bemberg, Fernando Solanas, Eliseo Subiela, Lucrecia Martel). Equal emphasis will be placed both on cinematographic and thematic analysis of the cinema, and, when appropriate, cultural and historic context will be provided. Films will be screened previous to class (most often with subtitles) and will be analyzed and discussed in class. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students taking this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3455, or SPAN 3455 may not attain credit for CCS 3455.

CCS3456   **The Cinema of Spain (O)**   **3 ch (3C)**

This course will provide the students with a background in Spanish cinema, emphasizing the most productive eras such as the Surrealist Movement and the Movida of the 1980s. Films to be studied include those of directors such as Luis Buñuel, Pedro Almodóvar, Alejandro Amenabar, Elías Querejeta, Mario Camus, Bigas Luna, Carlos Saura, Victor Erice, Laura Mañá, and Iciar Bollaín. Equal emphasis will be placed both on cinematographic and thematic analysis of the cinema, and, when appropriate, cultural and historic context will be provided. Films will be screened previous to class (most often with subtitles) and will be analyzed and discussed in class. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students taking this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3456, or SPAN 3456 may not attain credit for CCS 3456.

CCS3594   Paris in Literature (O) (Cross-Listed: FR 3594)   3 ch [W]

Paris has played a key role in French literature. The city has inspired numerous poets and novelists and it has been described by countless others. Students will read and study a number of works that highlight Paris and the provincial capital of Poitiers. There will be visits to museums, residences, cafés and cultural sites where the authors lived and wrote and where their novels take place. Normally taught on location in France. **NOTE**: Classes will be conducted in French. Students who register in CCS 3594 can choose to read the novels in translation and submit their assignments in English. Students who have taken WLCS 3594 may not attain credit for CCS 3594.

CCS3666   **Icons of Non-Violence I**   **3 ch [W]**
               (Cross-Listed: SOCI3666)

Examines the religious, philosophical and ethical justifications from the perspectives of different religious traditions of non-violence as a tool for social change in the contemporary world. We will study the concepts and theories of non-violence that may include selected writings of L.N. Tolstoy (Russia), M. Gandhi (India) and R. Menchu (Guatemala) within their cultural, social, historical and religious traditions. This course is offered in English. *Prerequisite*: 30 ch or permission of the instructor.

CCS3667   **Icons of Non-Violence II (O)**   **3 ch [W]**
               (Cross-Listed: SOCI3667)

Examines the religious, philosophical and ethical justifications for non-violence as a tool for social change in the contemporary world from the perspectives of diverse religious traditions. We will study the concepts and theories of non-violence that may include selected writings of the 14th Dalai Lama, Cesar Chavaz and Wangari Maathai, in their religious, cultural, social and historical backgrounds. *Prerequisite:* 30 ch or permission of the instructor.

CCS3668   **Women, Creativity, and Nonviolence   3 ch (3C) [W]**
               (Cross-Listed: SOCI 3668)

Examine the creative contributions of women to the resolution of conflicts and the building of peace through nonviolent means around the world.

Discuss their achievements and their tactics by drawing on intersectionality as an important analytical lens for the work of outstanding women from diverse countries such as Yemen, Russia, the USA, Chile, Liberia, Nigeria, Brazil and others. Study how and why gender matters in the context of nonviolence and peace-building in the contemporary world. *Prerequisite:* Open to students who have completed 30 ch or by permission of the instructor. **NOTE:** Students can receive credit for either CCS 3668 or SOCI 3668.

CCS3701   **The Cultural Turn: Cultural Studies in   3 ch (3C) [W]**
               Historical Context (O) (Cross-Listed: HIST 3701)

Traces the history of cultural studies from its debated foundation through the Birmingham school in post-war Britain, to its reshaping by post-Marxist, postmodernist, feminist, postcolonial, and diasporic perspectives. Analyzes the key debates in cultural studies at the onset of the twenty-first century, which include the field's reorientation towards the study of popular culture, activism through cultural politics, the politicization of knowledge and of the academy, and "the cultural turn" of the humanities and social sciences. Students who have taken WLCS 3701 may not attain credit for CCS 3701.

CCS3793   **East Coast Music (O)**   **3 ch (3C)**
               (Cross-Listed: MAAC3793, MUS 3793)

The relationship between music and East Coast identity is the focus of this course that covers a range of music styles, regional differences, and contemporary modes. The theme uniting the various case studies is the importance of music to the region's culture(s). The subject also allows for a broader reflection on music's importance to identity. Topics may range from Cape Breton fiddle, through to Halifax hip-hop. Students who have taken WLCS 3793, MAAC 3793, or MUS 3793 may not attain credit for CCS 3793.

CCS3794   **Music and Cultural Identity (O)**   **3 ch (3C)**
               (Cross-Listed: MUS 3794)

This course will examine some of the ways in which cultural (national, regional, ethnic, class, etc.) identity is and has been expressed through music, as well as the origins, persistence, and dispersion of some of the resultant forms and genres. This will also permit us to interrogate the stability and/or fluidity of various notions of identity. Critical and theoretical readings will be employed to explore the identity of cultural groups and musical forms ranging from Tango to Blues, Opera to protest song, Flamenco to Hip Hop, from Hawaii to Russia, Canada to South Africa. The course will normally be team-taught; no previous musical background required. Open to students who have completed at least 30 ch of university courses or by permission of instructor. Students who have taken WLCS 3794, or MUS 3794 may not attain credit for CCS 3794.

CCS3795   **Dark Futures: Visions of Dystopia since   3 ch (3C)**
               World War I (O) (Cross-Listed: MAAC 3795)

Offers an exploration of dystopian literature and film from a broad cross-section of cultures over the past 100 years or so. Based on an examination of texts by authors such as Karel Capek, Evgeny Zamiatin, Paolo Bacigalupi, and Sandra Newman and films such as Stalker, Late August in the Hotel Ozone, and Battle Royale, students will consider how dystopias reflect, respond to, and anticipate totalitarianism, environmental degradation, dehumanization, and other social, political, cultural, and technological challenges facing humanity. Students who have taken WLCS 3795 may not attain credit for CCS 3795.

CCS3797   Music of Canada (O) (Cross-Listed: MUS 3797)   3 ch (3C)

Introduction to Canada's rich and diverse traditions, institutions, and industry. From the musical traditions of the First Nations peoples, through the music of the early settlers, to today's diversity of styles, Canada's music will be studied in its cultural and historical contexts. Restriction: Credit may not be obtained for both FNAT 3796 and MUS 3797.

CCS3798   **The Forbidden, the Rebellious, and the   3 ch (3C)**
               Misunderstood: Canadian Jazz, Popular and Classical Music,
               1950 to the Present (A) (Cross-Listed: MUS 3798)

This course explores the social and historical developments of music in Canada from the 1950s through the public awakening of the 1960s to the implications of the Canadian content regulations of the 1970s and up to the present with a focus on the period ending around 1980. Music will be examined in relation to such notable phenomena as the Cold War, Expo 67 and the Hippie Movement. Major musical figures, composers, and performers featured and discussed may include The Band, Oscar Peterson, Glenn Gould, Paul Anka, Buffy Saint-Marie, The Guess Who and Rush.

CCS3799   Women in Music (Cross-Listed: MUS 3799)   3 ch (3C)

Tracing the influences of women involved in music in a range of settings in the western world, this course presents the variety of ways that women have influenced, created and performed music through the ages. Feminist perspectives will be explored through an examination of the roles of

selected individuals whether they were composers, performers or patrons. As such the course will include such individuals as Nannerl Mozart, Nadazhda von Meck, and Alma Mahler, as well as composers Clara Schumann, and Fanny Mendelssohn, who were performers in their own right. Students who have taken WLCS 3799, or MUS3799 may not attain credit for CCS 3799.

CCS3877   **Modern Drama (A)**   **3 ch (3C) [W]**

A survey of major developments in 20th-century theatre. Plays will be studied with attention to their often controversial engagements with social and political issues, moral debates, and theatrical conventions, as well as their connections to movements such as realism, modernism, expressionism, and absurdism. Students who have taken WLCS 3877 may not attain credit for CCS 3877.

CCS3904   **Background of Latin American Cultures**   **3 ch (3C)**

A chronological examination of the forces that have shaped the diverse Latin American cultures. This course studies major historical periods and their characteristics, from Pre-Hispanic Cultures, through the Conquest and the Colonization, the Independence movement, the formative period of the new nations to the present. The cultural aspects to be analyzed and discussed include: Catholicism and religious syncretism, the cultural legacy of colonial life, the struggles for independence, literary expression and the role of women. The use of videos, music, the Internet and literary texts, will provide a multimedia approach to Latin American cultures. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3904, or SPAN 3904 may not attain credit for CCS 3904.

CCS3909   **Three Cultures in Medieval Spain (A)**   **3 ch (3C) [W]**

For seven centuries (711 A.D. - 1492), part of the Iberian Peninsula (Spain and Portugal) fell under Muslim rule. Al-Andalus with its cultural diversity, unique architecture (Alhambra in Granada), art and intellectual activity became 'the ornament of the world.' There arose a contested state of coexistence (termed *convivencia* by Spanish historians) amongst Christian, Jewish and Muslim cultures. These three distinctive intellectual and religious communities bore witness to significant cultural achievements until the downfall of Al-Andalus. In this course, students will explore the multi-cultural world of Muslim Spain through the analysis of selected texts from literature and philosophy. The diversity of the artistic expression through dance, music, and architecture in all three cultures will also be studied. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course is to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3909, or SPAN 3909 may not attain credit for CCS 3909.

CCS3973   **Latin American Narrative at the Movies (O)**   **3 ch (3C)**

Many Latin American novels and short stories have been adapted by movie-makers around the world. In addition to studying these works as literature, this course will analyse their cinematic interpretations. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3973 or SPAN 3073 may not attain credit for CCS 3973.

CCS3974   **Contemporary Spanish American Narrative (O)**   **3 ch (3C)**

Studies selected works of some major Spanish American writers. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3974, or SPAN 3974 may not attain credit for CCS 3974.

CCS3983   **Afro-Latin American Literature (O)**   **3 ch (3C) [W]**

Explores the literary representation and contribution of Afro-Latin American elements in Literature. This course may be taken as part of the International Development Program. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish. Students who have taken WLCS 3983, or SPAN 3983 may not attain credit for CCS 3983.

CCS3984   **Indigenous Literatures of Latin America (O)**   **3 ch (3C) [W]**

Explores Indigenous narratives of Latin America to bring to light the historical and cultural realities of these peoples. Using translations of texts written in Spanish, Portuguese, and Indigenous languages in many genres and artistic forms, students challenge issues of race, ethnicity, class, and religion, sexuality, as well as other vital concerns of identity as

reflected in both oral and written literary traditions through the history of the Americas. It will also explore the connections between ancient and contemporary Indigenous considerations and reflect on the various influences on, and of, these traditions. Open to students who have successfully completed at least 30 credit hours at the university level.

CCS4021   **Advanced Studies in Popular Culture (A)**   **3 ch (3S) [W]**
               (Cross-Listed: MAAC 4021)

Seminar focusing on theoretical approaches to the study of popular culture. Topics and theories covered may rotate from year to year. *Prerequisites:* 60 ch and MAAC/CCS 2021, or permission of the instructor.

CCS4062   **Contemporary Spanish and Latin**   **3 ch (3C)**
               American Women Artists (A)

This course is designed to explore the contributions of the contemporary Spanish and Latin American women artists through literary and visual arts. We will examine themes of cultural and political identity, sexual repression, class issues and racism through the various genres including literature, film, dance and music. This course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill Major/Honours requirements will write papers in Spanish. Students who have taken WLCS 4062, or SPAN 4062 may not attain credit for CCS 4062.

CCS4063   **20th Century Women Writers**   **3 ch (3C) [W]**

A study of selected texts by European (primarily German, Russian, Polish, and Spanish), Caribbean and Latin American women writers of the twentieth century. Through textual analysis, the course examines the conditions of women in diverse cultures as well as aspects of the cultural construction of female identity. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor. Students who have taken WLCS 4063 may not attain credit for CCS 4063.

CCS4083   **Interdisciplinary Seminar**   **3 ch (3S) [W]**

An interdisciplinary seminar examining some aspect of the interactions of literature--whether a single text or a body of texts by one or more authors--with other cultural texts. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor. Students who have taken WLCS 4083 may not attain credit for CCS 4083.

CCS5000   **Honours Thesis**   **6 ch [W]**

A reading and research course open to students qualifying for Honours in World Literature and Cultural Studies. To enrol in this course students must first identify two professors from different specializations to supervise their project, and then have the project and supervisors approved by the Department. The project will lead to the writing of an Honours Thesis, normally 40-60 pages in length. Students who have taken WLCS 5000 may not attain credit for CCS 5000.

COMPUTER SCIENCE

See beginning of Section H for abbreviations, course numbers and coding.
The *L notation indicates that labs are held on alternate weeks.
The [P] designation is used to identify courses that involve significant programming work assigned to each individual student. The programming component involves substantive feedback and guidance to develop and improve programming skills. For elective courses, the programming component goes beyond the skills a BCS student can be expected to achieve as part of their core courses. Please see the Bachelor of Computer Science degree regulations for further details.
The Timetable should be used to check the term and time a course is offered. Some courses may not be offered every year.
NOTE: Only undergraduates in their final year and with a CGPA of 3.0 or better are eligible to take 5th level courses.

CS1003   **Programming and Problem Solving for Engineers 4 ch (3C 1.5L)**

Introduction to the use of digital computers for problem solving and communicating solutions. Covers use of procedures, decisions, loops and arrays focusing on scientific and engineering problem analysis, algorithm design, and program structure. Also includes organizing, tabulating, and graphing program output with different software tools to communicate results. This course is currently taught primarily in Python. **NOTE**:.This course may not be taken for credit by BCs or BScSwE students. *Prerequisite:* High School Mathematics. *Co-requisite*: PHYS 1081 or equivalent, or permission from instructor.

CS1023   **Data Structures and Algorithms for Engineers**   **4 ch (3C 1.5L)**

Introduction to the ideas of abstraction of procedures and data. Implementation and handling of the fundamental data types: lists, stacks, queues, and graphs. Basic concepts of discrete mathematics, elements of

combinatorics, aspects of complexity and recursion and algorithm development, including estimation of program resource utilization. This course is currently taught in C. **NOTE**: This course may not be taken for credit by BCs or BScSwE students. *Prerequisite:* CS 1003.

CS1073   Introduction to Computer Programming I   4 ch (3C 1.5L 1T) [P]
(in Java)

Covers fundamental concepts such as decisions, loops, arrays, classes, methods and inheritance; focusing on problem analysis, algorithm design, program structure and readability. Introduction to the Java API libraries.

CS1083 Introduction to Computer Programming II   4 ch (3C 1.5L 1T) [P]
(in Java)

Continues CS 1073 focusing on problem analysis, algorithm design program structure and readability. Covers recursion, sorting and searching, data abstraction, encapsulation, inheritance, polymorphism, simple data structures and files, testing and debugging. *Prerequisite:* CS 1073.

CS1103   Introduction to Databases   4 ch (3C 2L)

Topics include: Motivation for and capabilities of database management systems; the role of databases in a three-tier application architecture; relational data model; relational algebra; functionald dependencies and normalization; SQL language, including creating, loading, updating, modifying, and querying database tables; data integrity, security and privacy; entity relationship data modeling; CRUD analysis; stored procedures; accessing a database using an API such as JDBC; brief introduction to advanced topics such as data warehouses, big data, and XML. **NOTE:** Credit is only given for one of CS 1103, CS 2513, CS 2533, INFO 1103, and INFO 2103. *Prerequisite:* CS 1073.

CS1203   Overview of Computer Science   3 ch (3C 1T)

This course surveys many of the fundamental concepts and theories used throughout computer science. Topics include history of computers, computer hardware, system software, programming languages, networking, theory of computation, social issues, and other topics within computer science. Emphasis is also placed on topics relevant to various areas of study within the BCS program. *Prerequisite:* None. **NOTE:** Intended only for first year computer science students and interested students from other Faculties.

CS1303   Discrete Structures   4 ch (3C 1T)

Introduces topics in discrete mathematics important in computer science, including: propositional logic, predicate logic using quantifiers, direct and indirect proofs, summation and product notation, mathematical induction, elementary set theory and counting. Students are expected to write mathematical proofs throughout the course. **NOTE:** credit will not be given for both CS 1303 and MATH 2203.

CS2043   Software Engineering I   4 ch (3C 2L)

Introduction to fundamentals of the discipline of software engineering with focus on the software development life cycle. Topics include software development methodologies and processes, requirements analysis, modeling, architecture, design, implementation, testing, and maintenance. Basics of software management are also introduced. *Prerequisite:* CS 1083. **NOTE:** Credit is given for at most one of CS 2013, CS 2033, CS 2043, or ECE 4403.

CS2053   Introduction to Game Development   4 ch (3C 1.5L) [P]

Introduces basic concepts and technologies for computer and video game development, including math and physics foundations for games, core technologies and algorithms in game development, game design and implementation, and game development environments and programming. By taking this course, students will understand various elements and phases of game development. Students will develop simple games during the course. *Prerequisite:* CS 2043 or CS 2263 or ECE 4403.

CS2063 Introduction to Mobile Application Development 4 ch (1.5C 3L) [P]

Introduces students to the development of application software for mobile computing platforms. Characteristics of mobile computing platforms versus non-mobile platforms. Mobile application design principles, including design of effective user interaction and factors that affect application performance. Programming common mobile application functionality such as location, orientation, and motion awareness, as well as touch, gesture, and camera input. Interacting with remote APIs. Students will gain experience creating and testing applications for a selected currently prominent mobile platform. *Prerequisite:* CS 2043 or CS 2263 or ECE 4403.

CS2253   Machine Level Programming   4 ch (3C 2L) [P]

Introduces students to lower-level computer operations and the association with higher-level procedural programming constructs. Topics include binary representation of data, instruction formats and execution,

assembler programming, scope, functions, user-defined data types using both low- and high-level programming languages. *Co-requisite:* CS 2263. **NOTE**: Credit cannot be obtained for CS 2253 by students who have completed both CS 2023 and CS 2813.

CS2263   Systems Software Development   4 ch (3C 2L) [P]

Procedural program development and supporting tools, using the C-language. Topics include: implementation of data structures and algorithms, memory management, and performance techniques. Includes software tools for program development such as compilation/linking, building, debugging, and version control. *Prerequisite:* CS 1023 or CS 1082. **NOTE:** Credit will not be given for both CS 2263 and CS 2023.

CS2333   Computability and Formal Languages   4 ch (3C 1T)

This course introduces students to some of the fundamental ideas in theoretical computer science: functions and relations, formal languages, finite automata, regular languages, context-free grammars, context-free languages, push-down automata, pumping lemmas, Turing machines, the Church-Turing thesis, recursive and recursively enumerable languages, the Chomsky hierarchy, the halting problem and other unsolvable decision problems, problem reducibility, and fundamental computational complexity classes. *Prerequisites:* CS 1073, CS 1303, and 30 ch.

CS2383   Data Structures and Algorithms   4 ch (3C 1T) [P]

Presents formal specifications of abstract data types and their data structure representations, operations, and algorithms. Includes priority queues, dictionaries, graphs, heaps, hash tables, binary search trees, balanced trees, and graph adjacency representations. Covers sorting, searching, dynamic storage handling, and fundamental graph algorithms. Asymptotic analysis of time and space complexity are taught and used throughout the course. Students are expected to implement a variety of data structures and graph algorithms. *Prerequisites:* (CS 1083 or ECE 4403) and CS 1303. **NOTE**: Credit is not given for both CS 2383 and CS 3323.

CS 2413   Information Security   4 ch (3C 1L)

This course gives an introduction to information security. It examines the fundamentals of the modern threat landscape, introducing the concepts of malware and denial-of-service attacks. The course covers security defense mechanisms such as intrusion detection, authentication, access control, cryptography. Students will also study the basics of security planning, including risk assessment and incident response. **NOTE:** Credit is only given for one of CS 2413 and INFO 2403. *Prerequisites:* CS 1103, CS 2263, and (MATH 1833 or CS 1303 or equivalent).

CS2545   Data Science for Big Data Analytics   3 ch (3C)

Data science enables one to bring structure to large quantities of data and make analysis possible. The purpose of the course is to introduce students to the fundamentals of data science and prepare them in dealing with the challenges of Big Data analytics. It covers basic and advanced Python programming and Python libraries for data analysis. It presents data visualization techniques and statistical methods, as well as data exploration techniques such as data cleaning and munging, manipulating data, rescaling and dimensionality reduction. It includes an introduction to machine learning and presents special data analysis topics. Also, it introduces data analysis approaches with relational databases and Big Data frameworks. *Prerequisite:* CS 1073 or CS 1003.

CS2613   Programming Languages Laboratory   4 ch (4L) [P]

Introduces several programming languages in a hands-on-setting, with a view to preparing students for advanced courses and/or workplace projects. Students will carry out supervised laboratory exercises and independent work designed to improve programming skills, boost confidence and competence in acquiring new languages, and help choose implementation languages for future projects. Currently the course covers Python, JavaScript, Octave/Matlab, and Racket. *Prerequisite:* CS 1083.

CS2999   Problem Solving for Programmers   3 ch (3L) [P]

This course entails a hands-on approach to problem solving for computer programmers. Under instructional guidance the students will work on programming problems that represent basic classes of problems found in computer science. Concepts in data structures, algorithms, geometry, and software development and testing are covered. *Prerequisite:* Experience in programming competition and permission of the instructor. *Co-requisites:* CS 2263, CS 2383.

CS3025   Human-Computer Interaction   3 ch (3C)

Software design for interactive computing. Topics include: human-computer interaction principles, interface design guidelines, the design and execution of usability studies. The characteristics of various styles of interaction are explored. Emphasis is on user-oriented interfaces. Students design, implement, and perform a usability study on an

interactive software application. *Prerequisites:* 60 ch and (CS 2043 or MAAC 3102) or permission of instructor).

CS3035   **Building User Interfaces**   **3 ch (3C) [P]**

Basic approaches and techniques for implementing human-computer interfaces. Basic user interface concepts, common interaction techniques and architectural approaches for constructing user interfaces. Topics include but are not limited to 2D graphics, physics of virtual objects, event-driven programming, interface widgets, design patterns for user-interface development, the use and design of layout managers, user interface builders, programming hardware for physical devices, gesture and shape recognition, internationalization, and networked interactions. *Prerequisite*: CS 2043 or (CS1083 and MAAC 3102) or permission of instructor.

CS3043   **Software Engineering II**   **4 ch (3C 3L)**

Examines software development processes and management, visual modeling and Unified Modeling Language, requirements capture, use case analysis, system design and implementation, components, forward and reverse engineering, software engineering tools, testing techniques, configuration management, and project management. *Prerequisite:* CS 2043. **NOTE**: Credit is not given for both CS 3013 and CS 3043.

CS3103   **Programming on the Web**   **3 ch (3C) [P]**

Modern web techniques and technologies. Exposes students to traditional web page technologies, but focuses on the dynamic web, including structure and communication between server and client, whether it be machine -to-human, machine-to-app or machine-to-machine, using web services. Topics will include transport protocols and data representation for mobile computing and machine-to-machine communication, as well as client techonologies to support dynamic web pages. **NOTE:** Credit is only given to for one of CS 3103 and INFO 3103. *Prerequisites:* CS 1103 and (CS 2043 or ECE 4403), CS 2613 is recommended.

CS3113   **Introduction to Numerical Methods**   **3 ch (3C)**

Intended for Computer Science and Engineering students. Error analysis, convergence and stability. Approximation of functions by polynomials. Numerical quadrature and differentiation. The solution of linear and non-linear equations and the solution of ordinary differential equations. This course will emphasize the understanding of numerical algorithms and stress applications in the applied sciences, as well as the influence of finite precision and arithmetic on computational results. Credit will be given for only one of CS 3113 or MATH 3413 or ECE 2412. *Prerequisites:* (CS 1003 or CS 1073) and (MATH 2213 or MATH 1503).

CS3383   **Algorithm Design and Analysis**   **4 ch (3C 1T)**

This course examines the characteristics of algorithms that lead to efficient computer solutions for discrete problems. A variety of different algorithm classes and design techniques, including divide and conquer, greedy, dynamic programming, and backtracking, are introduced and compared. Design and analysis of randomized algorithms is introduced, along with strategies for dealing with computationally hard problems. Normally, one or more models of parallel algorithms will be discussed. *Prerequisites:* CS 2333, CS 2383 and (STAT 2593 or STAT 3083). **NOTE**: Credit is only given for one of CS 3383, CS 3913 and CS 3933.

CS3413   **Operating Systems I**   **4 ch (3C 1.5L) [P]**

This course examines the fundamental role of an operating system in relation to the operation of applications. Essential theory of operating systems is covered, including processes, process synchronization, interprocess communications, process scheduling, storage (primary and secondary) management, resource sharing, security, I/O, and user interfaces. At least one of the major Unix shell languages will be covered. *Prerequisite:* CS 2263 or (CS 1023 and ECE 3321).

CS3503   **Systems Analysis, Design and**   **4 ch (3C 1T) [W]**
                          Project Management

Introduces students to the life cycle of information systems. Covers techniques and tools used in systems analysis and project management. Emphasizes communication skills, both written and oral, as well as team skills. *Prerequisites:* CS 1103 and 60 ch.

CS3543   **Databases Systems and Administration**   **3 ch (3C)**

Topics include: internal database structure; query evaluation and optimization; transaction , management concurrency control; database recovery; distributed and parallel database architectures; physical database design; performance tuning and capacity planning; database administration; technical architecture design and systems integration. **NOTE:** Credit is only given for one of CS 3543 and INFO 3403. *Prerequisites:* CS 1103 and 60 ch (CS 3413 recommended).

CS3703   **Multimedia Design**   **3 ch (3C)**

Introduction to the design and production of multimedia applications. Includes issues in capture, storage, and effective use of images, sound,

and video; animation; multimedia and hypermedia design principles; authoring tools. *Prerequisites:* CS 1073 and 60 ch.

CS3853   **Computer Architecture and Organization**   **4 ch (3C 2L)**

Introduction to computer organization and architecture, digital logic, interfacing and I/O strategies, memory architecture, functional organization, multiprocessing, performance enhancements. *Prerequisite:* CS 2253. **NOTE**: Credit is not given for both CS 3853 and CS 3813.

CS3873   **Net-centric Computing**   **4 ch (3C 2*L)**

Introduction to fundamentals of data communication and application programming in a networked environment. Topics include data transmission, data link concepts, networking concepts, network security, application protocols, net-centric computing and web programming. *Prerequisites:* CS 2253 or CS 2263. CS 2263 is recommended.

CS3997   **Professional Practice**   **3 ch (3C) [W]**

Covers social context of computing, professional and ethical responsibilities, risks and liabilities of computer-based systems, intellectual property, privacy and civil liberties, and professional certification. Instructs students in the preparation of technical reports in Computer Science. Involves an independent study component resulting in a technical report, typically a survey paper. Covers technical writing, oral presentation and library skills. *Prerequisites:* Enrolment in the BCS program and 40 ch completed.

CS4015   **Software Architecture and Design Patterns**   **4 ch (3C 2L) [P]**
                        (Cross-Listed: SWE 4403)

This course introduces concepts of software design patterns and architecture. The course covers principles of reusable object-oriented programming, as well as creational, structural, and behavioural patterns. The course also covers software quality attributes, architectural tactics and patterns, designing and documenting software architecture, architecture reconstruction, architecture evaluation, and software product lines. Students will practice applying and implementing design patterns and software architecture design and evaluation in course work by developing various software systems. *Prerequisite:* CS 2043 or permission of the instructor.

CS4065   **Interactive Human-Centered Systems**   **3 ch (3C)**

This course will introduce current topics in the field of Human-Computer Interaction to provide a deeper understanding of human needs and capabilities, and in designing and evaluating new people-centered technologies. Foundational concepts, important challenges and technologies will be presented from several domains of application, such as: collaborative technology, information visualization, games, and input and output techniques and devices. *Prerequisites:* CS2043 and 75 ch, or permission of the instructor. CS 3025 is recommended.

CS4355   **Cryptanalysis and Database Security**   **4 ch (3C 1T) [P]**

A practical survey of the principles and practice of information security. Topics include conventional encryption, asymmetric and symmetric cryptology, digital signatures, key exchange, authentication, electronic mail security, network management security, the common criteria, and threat risk management. *Prerequisite*: CS 2413 or approval of the instructor.

CS4405   **Operating Systems II**   **4 ch (3C 1L) [P]**

Covers the structure and design of operating systems. Processor management. Storage management, input/output, interprocess communication, and interrupt handling. Real-time systems, centralized systems, multiprocessor and distributed systems. *Prerequisites:* CS 3413 and (CS 3853 or ECE 3221).

CS4411   **Fundamentals of Information Assurance**   **4 ch (3C 1T)**

Gives an introduction to information assurance, describes the vulnerabilities of IT infrastructures, as well as security threats faced by enterprises today. Based on the basic principles and strategies of information assurance, the course will also examine risk management, the development of security policies, guidelines, awareness programs, employment practice and policies, legal and ethical issues, as well as auditing IT security. Covers broad topics including contemporary issues in computer security, sources of computer security threats and appropriate reactions, encryption and decryption techniques; secure encryption systems; program security algorithms, trusted operating systems; database security issues and solutions, network and distributed system security models, administering security. In all listed topics, the legal and ethical security issues with respect to information assurance is also given. *Prerequisite*: CS 3873 or approval of the instructor.

CS4413   **Foundations of Privacy**   **4 ch (3C, 1T)**

Covers diverse topics on privacy preservation including basic cryptographic techniques for privacy, homomorphic encryption techniques for privacy, database privacy, big data privacy, privacy in cloud, privacy in

crowdsourced platforms, privacy in healthcare, privacy in vehicular ad hoc networks, privacy in social network, and location privacy. In addition, privacy law and regulation will be also discussed. Emphasizes both theoretical aspects and practical applications of privacy enhancing techniques. *Prerequisite*: CS 2413 or approval of the instructor.

CS4415　　　　**Network Security**　　　　**3 ch (3C) [P]**

This course examines advanced topics in network security, including: security risks and threats, security mechanisms across OSI model layers. Students will study the analysis of systems for vulnerabilities, the implementation of security procedures and the monitoring of systems for security breaches. Wireless network security will also be introduced. *Prerequisites:* CS 2413 and CS 3873.

CS4417　　　　**Software Security**　　　　**4 ch (3C, 1T) [P]**

Sits at the intersection of computer security and software engineering. This course is designed to give students practical experience with building a software system and securing it. It covers tools, guidelines, rules, principles, and other resources for addressing security issues in every phase of the software development life cycle (SDLC). Students will engage in a significant group-programming project to develop a novel piece of software. Emphasis will be placed on the correctness and robustness of software, and on security as part of the software engineering process. *Prerequisites*: (CS 2413 and CS 2043) or approval of the instructor.

CS4419　　　　**Digital Forensics**　　　　**4 ch (3C 1T)**

Introduces digital forensics notions and methods. Students will gain a basic understanding and legal awareness of computer security and forensics, techniques used in the evidentiary process, various methodologies intrinsic to computer forensics with emphasis on computer incident response, and IT systems protection. *Prerequisite*: CS 2413 or approval of the instructor.

CS4495　　　　**Cybersecurity Capstone Project**　　　　**6 ch [W]**

Provides students with an opportunity to conduct a real-world cybersecurity project, from defining a realistic cybersecurity problem to applying a suitable methodology for the design, development, and evaluation of an appropriate solution to the problem. Both the problem statement for the capstone project and the datasets originate from real-world domains similar to those students might encounter within the cybersecurity industry. Students are expected to conduct a research literature review and to develop a set of hypotheses/methodologies for the research project. Involves a research proposal outlining alternative remedies to the problem and hypotheses/methodologies, as well as a final report. Students are expected to complete the capstone project with an industry partner. *Prerequisites*: CS 4415 and CS 4419.

CS4545　　　　**Big Data Systems**　　　　**3 ch (3C) [P]**

Data systems are going through a major transition due to the challenges of Big Data processing. The outcome of this shift is the emergence of a new breed of systems that can handle data at massive scales. This course presents some of these systems, along with the principles of query processing. Specifically, it compares Relational vs. NoSQL data models and covers the foundations of query processing, including index-based access and join processing. It presents the principles of parallel databases, and explores batch processing frameworks, as well as iterative processing frameworks. It also covers SQL interfaces over these frameworks. It introduces update-intensive systems and graph data stores. It includes the special topics of spatial and spatio-temporal data processing. *Prerequisites:* (CS 1103 or CS 2545) and 75 ch or permission of the instructor. CS 3543 is recommended.

CS4613　　　　**Programming Language Interpretation**　　　　**4 ch (3C 1L) [P]**

Learn core programming language concepts including scope, lazy and eager evaluation, mutation, recursion, dynamic and static types, and memory management. Study a statically typed functional language and use it to write interpreters demonstrating these core concepts. Learn the main techniques of memory management including allocation, liveness detection, reference counting, compaction, and general collectors. *Prerequisites:* CS 2263, CS 2333, and CS 2613.

CS4725　　　　**Introduction to Artificial Intelligence**　　　　**3 ch (3C)**

Introduction to intelligent agent design, problem solving using search techniques, the use of mathematical logic for knowledge representation and reasoning, decision making under uncertainty, machine learning techniques. *Prerequisites:* CS 2333 and CS 2383.

CS4735　　　　**Computer Graphics**　　　　**4 ch (3C 1L)**

Covers interactive 3-dimensional computer graphics program development using object-oriented tools. Includes keyboard and mouse interaction, callback functions, windows and viewports, drawing parametric curves and surfaces, affine transformations, the camera model and graphics pipeline, geometric modeling using polyhedral meshes,

flying a camera, arcball scene interaction, perspective projection, and visual realism via colour, lighting and texture. *Prerequisites:* CS 2263, CS 2613 and (MATH 1503 or MATH 2213).

CS4745　　　　**Introduction to Parallel Processing**　　　　**4 ch (3C 2L) [P]**

Parallel computer architectures, design and analysis of parallel algorithms, parallel programming languages, case studies, selected numerical and non-numerical applications. *Prerequisite:* CS 3853.

CS4765　　　　**Natural Language Processing**　　　　**3 ch (3C) [P]**

Presents an introduction to methods for intelligently processing human language data in text form, as well as relevant linguistic background. Topics include fundamental topics in natural language processing such as n-gram language models, part-of-speech tagging, parsing, and lexical semantics, as well as applications such as spelling correction, document classification, information retrieval, and machine translation. Students are expected to implement and evaluate a variety of natural language processing methods, as well as write reports describing their implementations and their performance. *Prerequisites:* CS 3383 and (STAT 2593 or STAT 3083)

CS4805　　　　**Embedded Systems**　　　　**4 ch (3C 1T)**

This course will give an overview of the characteristics and design of embedded systems. Topics include formal models and specification languages for capturing embedded system behaviour; techniques for specification, exploration and refinement; tools for validation, verification, and simulation; and quality and performance metrics. *Prerequisites:* CS 3413 and CS 3853.

CS4865　　　　**Principles of Data Communications and**　　　　**4 ch (3C 2*L)**
　　　　　　　　　　　Networks Modeling

Covers advanced concepts of data communications systems design: architecture, media, communication channel, routing, protocols, protocol architecture and focuses on modeling and performance analysis. Includes introduction to network simulation in ns2 and OpNet. *Prerequisite*: CS 3873.

CS4905　　　　**Introduction to Compiler Construction**　　　　**4 ch (3C 1.5*L) [P]**

Introduces the primary concepts and methodologies used to build compilers. Covers lexical analysis, predictive and LR parsing, compiler compilers and error handling. Syntax-directed translation using abstract parse trees, visitors, symbol tables and type checking. Object code generation including the activation record stack, parameter passing, intermediate representation trees, instruction selection, tree tiling and register allocation. *Prerequisite:* CS 2333.

CS4935　　　　**Advanced Algorithmic Techniques**　　　　**4 ch (3C 1T)**

This course covers advanced algorithmic techniques for analyzing and handling intractable and complicated tractable problems. Topics include NP-completeness and problem reductions, randomization, approximability, special case analysis, and network flow algorithms. *Prerequisites:* CS 3383.

CS4983　　　　**Senior Technical Report**　　　　**2 ch (2C) [W]**

Builds on the skills developed in CS 3997 through the preparation and presentation of a technical report, which is typically a critical analysis paper. *Prerequisite:* CS 3997.

CS4995　　　　**Topics in Computing**　　　　**4 ch**

A selected area of computing with a unifying theme will be explored in depth at an advanced level. This course will be offered only occasionally, with the course topic determined by the instructor and the Faculty of Computer Science. *Prerequisites:* Normally, enrolment in the BCs or BScSwE program, at least 90 ch completed, and permission of the instructor.

CS4997　　　　**Honours Thesis**　　　　**4 ch [W]**

This course provides the student with the opportunity to undertake a project at a depth not provided elsewhere in the curriculum. Planning the thesis is done in the term prior to completion. The project topic must have the approval of a supervisor before the start of term. The student submits detailed proposal, schedule, progress reports, and final thesis report to the thesis coordinator with the supervisor's approval. A seminar is required. Detailed guidelines available from coordinator in the preceding term. Offered as an eight month course. *Prerequisite:* CS 3997. Open to all CS students in their final year with a B average in the previous assessment year or a B CGPA. To receive an Honours designation please refer to the CS Curriculum regulations in the program Section of the Calendar.

CS4998　　　　**Open Source Project**　　　　**4 ch [P]**

An Undergraduate Capstone Open Source Project (UCOSP). Students gain hands-on experience with real-world development practices in a realistic environment while simultaneously learning and applying some

core concepts of Computer Science. As part of a national initiative, senior undergraduate students from across Canada work together on open-source software projects. Students work in distributed teams with individuals from other Canadian universities. *Prerequisites:* Instructor approval and at least 90 ch completed.

CS4999   **Directed Studies in Computer Science**   **4 ch**

Students may pursue directed studies in specific areas and topics related to Computer Science. The content and process of each directed study will be through negotiation between a student and the supervising faculty member(s). *Prerequisites:* Normally, Faculty approval and at least 90 ch.

CRIMINOLOGY AND CRIMINAL JUSTICE

See beginning of Section H for abbreviations, course numbers and coding.

CRIM1603   **Introduction to Criminology**   **3 ch**
            (Cross-Listed: SOCI 1603)

Explores the subject matter of criminology and its relationship to other academic disciplines. Examines different concepts and terms commonly used in criminology, the specificity of criminology, relationship between theory and practice, the history and evolution of criminological thought, and the methods of investigation into criminal behaviour. The practical applications of criminology and the foundations of a modern criminal justice policy is also discussed. **NOTE:** Credit can be obtained for only *one* of CRIM 1603, SOCI 1603, and SOCI 3603.

CRIM2015   **Introduction to the Canadian Criminal Justice**   **3 ch [W]**
            System (Cross-Listed: SOCI 2015)

Introduces the Canadian Criminal Justice System (CCJS). The CCJS is comprised of various organizations of the federal, provincial, and municipal governments that respond to crime. Follows the accused through the various instances within the CCJS: police, courts, prosecution, sentencing, and corrections. Examines how the CCJS operates in the Canadian context and explores the larger functions it serves. The overall objective is to understand the role played by CCJS in Canada and to develop a critical analysis of responses to crime. **NOTE:** Credit can be obtained for only *one* of CRIM 2015 and SOCI 2015.

CRIM2563   **Violence and Society (Cross-Listed: SOCI 2563)**   **3 ch [W]**

Introduces a broad range of violent crimes from sociological perspectives. Includes a survey of political violence such as genocide, the holocaust, state and anti-state terrorism; analysis of hate crimes and various types of homicide such as serial murder, mass murder, and thrill killings; examination of various manifestations of violence against women such as mass and date rape; exploration of kinds of assault such as physical assault, spousal battery, and child abuse; and robbery. **NOTE:** Credit can only be obtained for *one* of CRIM 2563, SOCI 1563, CRIM 2563, and SOCI 2563.

CRIM2573   **Social Networks (Cross-Listed: SOCI 2573)**   **3 ch [W]**
Provides a conceptual introduction to the theories and methods related to the social scientific study of networks through an in-depth examination of application(s) and insights related to issues such as health, crime/deviance, on-line social networks, corporations, social movements, terrorism, social support, and more. Social Network analysis is a research method that allows social scientists to understand patterns of relations between various actors and organizations. Using both qualitative and quantitative data, social network analysis examines relations, interactions, roles, and affiliations that influence the structure of organizations and behviours of individuals using diverse methodologies. **NOTE:** Credit can only be obtained for *one* of CRIM 2573 and SOCI 2573.

CRIM2575   **Terrorism (Cross-Listed: SOCI 2575)**   **3 ch [W]**

Introduces the social-scientific study of terrorism, examining the theories, social dynamics, and historical contexts related to politically and ideologically inspired violence. **NOTE:** Credit can only be obtained for *one* of CRIM 2575 and SOCI 2575.

CRIM2603   **Sociology of Deviance (Cross-Listed: SOCI 2603)**   **3 ch [W]**

Examines the elements and patterns of deviance, basic principles of both normative and deviant behaviour, and the institutionalization of each. Examples of specific areas and types of deviance are studied in some detail. **NOTE:** Credit can only be obtained for *one* of CRIM 2603 and SOCI 2603.

CRIM2613   **Youth Justice (Cross-Listed: SOCI 2613)**   **3 ch [W]**

Examines the history of juvenile delinquency, its incidence, its causes, and the methods of investigation. Deals with agencies involved in the adjudication and treatment of juvenile and youthful offenders. **NOTE:** Credit can only be obtained for *one* of CRIM 2613 and SOCI 2613.

CRIM2663   **Social Perspectives on Victimology**   **3 ch [W]**
            (Cross-Listed: SOCI 2663)

Provides an opportunity to explore different forms of victimization in the Canadian context, examines various groups of victims and vulnerable populations, and define who victims are. Explores victimization by the criminal justice system, which includes reporting to the police, the investigation, the court process, etc. Focuses on various types of victims in society, such as Indigenous peoples of Canada and vulnerable populations. **NOTE:** Credit can only be obtained for *one* of CRIM 2663 and SOCI 2663.

CRIM3385   **Sociology of Policing and Security**   **3 ch [W]**
            (Cross-Listed: SOCI 3385)

Approaches the field of policing and security studies from a critical interdisciplinary perspective. Examines key theoretical perspectives and debates about policing and security and their roles in shaping social, political, and economic relations. Surveys the historical emergence, organization, and practices of the police institution in the context of nation-state formation and interlocking systems of capitalism, colonialism, patriarchy, and racism. **NOTE:** Credit can only be obtained for *one* of CRIM 3385 and SOCI 3385.

CRIM3613   **Theories and Perspectives in Criminology**   **3 ch [W]**
            (Cross-Listed: SOCI 3613)

Examines the historical development of criminological theory and the causes of crime. Deals with criminal causation theories and with an evaluation of the theories and purposes of punishment. **NOTE:** Credit can only be obtained for *one* of CRIM 3613 and SOCI 3613. Students who have completed SOCI 3610 or its equivalent may not receive credit for SOCI 3613.

CRIM3623   **White Collar Crime (Cross-Listed: SOCI 3623)**   **3 ch [W]**

Provides an analysis of the organized abuses of institutionalized power, particularly on the part of corporations and governments. The problem of controlling corporate and governmental deviance is also discussed as organizations pose prevention and control problems which are different from those involving individual deviants. **NOTE:** Credit can only be obtained for *one* of CRIM 3623 and SOCI 3623.

CRIM3634   **Violence against Women**   **3 ch**
            (Cross-Listed: FVI 3634 and SOCI 3634)

Examines issues pertaining to violence against women in Western society, including gender socialization, gender dynamics in dating and family relationships, private versus public, the contributions of social institutions (e.g., sports, the media, schools, the workplace, the military, the medical system, and the legal and criminal justice systems), and the special vulnerability of women in marginalized groups. **NOTE:** Credit can only be obtained for *one* of CRIM 3634, FVI 3634, and SOCI 3634.

CRIM3636   **Restorative Justice (Cross-Listed: SOCI 3636)**   **3 ch [W]**

Examines the paradigms of both restorative and transformative justice. Reviews criminal justice systems in post-industrial societies with a focus on punishment as the principal response to crime. Contrasts restorative justice with the current paradigm of retributive justice. Discusses victims, offenders, and the community within the context of the failure of the retributive system in meeting its responsibilities towards them. Critically analyses prisons, limitations of restorative justice models and programs, and Indigenous traditions in community justice. **NOTE:** Credit can only be obtained for *one* of CRIM 3636 and SOCI 3636.

CRIM3662 Understanding Genocide (Cross-Listed: SOCI 3662) 3 ch [W]

Violence is central in society, and genocide is one of its most destructive manifestations. Genocides are perpetrated to exclude or remove a group on the grounds of ethnicity, race, or political or religious affiliations. Genocide is a crime against humanity, and it manifests itself around the world. Using the Genocide Convention of the United Nations, this course explores different types of genocide (biological, physical, and cultural). The overall objective is to understand what factors lead one group of people to the killing of members of another particular group. **NOTE:** Credit can only be obtained for *one* of CRIM 3662 and SOCI 3662.

CRIM4301   **Topics in Criminology & Socio-legal Studies**   **3 ch [W]**
            (Cross-Listed: SOCI 4301)

Engages in an advanced in-depth analysis of topics in the field of criminology and their social and political implications. The focus of the course will vary from year to year. **NOTE:** Credit can only be obtained for *one* of CRIM 4301 and SOCI 4301.

CRIM4337   **Legal Responses to Family Violence**   **3 ch [W]**
            (Cross-Listed: SOCI 4337)

Explores the successes, challenges, and failures of legal responses to domestic violence. Why has the legal system had difficulty responding effectively to domestic violence? Does it have something to do with the nature of law, the nature of gender, and the nature of social science and social change? What happens when law is confronted by changing social conceptions of gender, of children, of the roles of men and women? Does

culture matter? Do new multi-disciplinary, collaborative judicial initiatives offer promise or peril? Students review legal cases and socio-legal research in order to search for answers to such questions. **NOTE:** Credit can only be obtained for *one* of CRIM 4337 and SOCI 4337.

CRIM 4355   Sociology of Law (Cross-Listed: SOCI 4355)   3 ch [W]

Provides a sociological analysis of law in modern society, including discussion of legal theory, sociological and feminist criticisms of law, law as a means of social control and change, socio-legal research into the processes used by the legal system and its alternatives (such as mediation, restorative justice models, victim-offender reconciliation programs) to resolve disputes, and the abilities of the legal system and its alternatives to offer justice to the disadvantaged. **NOTE:** Credit can only be obtained for *one* of CRIM 4355 and SOCI 4355.

CRIM4513   Inequality and Social Justice   3 ch [W]
(Cross-Listed: SOCI 4513)

Provides a sociological examination of current perspectives, responses, and debates about the meaning of equality and the just society. Possible topics include the shift from individual rights to collective rights and competition and cooperation at a macro and a micro level. NOTE: Credit can only be obtained for *one* of CRIM 4513 and SOCI 4513.

CRIM4573 Social Network Analysis (Cross-Listed: SOCI 4573) 3 ch [W]

Provides instruction on the core methodological skills related to the social-scientific study of networks as well as familiarity with social network analysis software. The methods used to conduct social network analysis (SNA) focus on gathering and applying data on relations, interactions, flows, roles, and affiliations, which are then used to conduct sociometric tests that provide insight into the overall influence and structure of social networks, groups embedded within networks, and how individuals fit within networks. Focuses on the applied knowledge of social network analysis. A mathematical or statistical background is not required. **NOTE:** Credit can only be obtained for *one* of CRIM 4573 and SOCI 4573.

CRIM4585   Organized Crime (Cross-Listed: SOCI 4585)   3 ch [W]
Takes a sociological and criminological approach to understanding core concepts and theories of organized crime. Provides familiarity with, and a conceptual overview of, the various forms and incarnations of organized crime, ranging from street gangs to highly complex and sophisticated transnational criminal organizations. NOTE: Credit can only be obtained for one of CRIM 4585 and SOCI 4585.

DRAMA

See beginning of Section H for abbreviations, course numbers, and coding.

DRAM1173   Introduction to Acting and Performance   3 ch (3 hours/wk
(Cross-Listed: ENGL 1173)   plus practical work)

An introduction to acting suitable for students at all skill levels, from beginners to experienced performers. Instruction will cover the basics of voice, movement, improvisation, script analysis, and monologue and scene work, culminating in a final performance project. **NOTE:** Students can obtain credit for only *one* of DRAM 1173 and ENGL 1173.

DRAM2173   Acting: Body and Text   3 ch (3 hours/wk
(Cross-Listed: ENGL 2173)   plus practical work)

A course suitable for both beginner and experienced actors, with a focus on voice, movement, and script analysis, culminating in the presentation of a scene study or one-act play. Rehearsal and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of DRAM 2173 and ENGL 2173.

DRAM2174   Technical Production and Design   3 ch (3 hours/wk
for the Theatre   plus practical work)
(Cross-Listed: ENGL 2174)
An introduction to set construction, lighting, sound, and stage management for the theatre, with instruction in basic principles of set, sound, and lighting design. As part of their work for the course, students will assist with carpentry and design work for one or more Theatre UNB mainstage productions, and act as crew members for productions. Workshop and performance time additional to regular class hours required. **NOTE**: Students can obtain credit for only *one* of DRAM 2174 and ENGL 2174.

DRAM2175   Mainstage Production I   3 ch (3 hours/wk
(Cross-Listed: ENGL 2175)   plus practical work)

Participants in this course form a theatre company and produce, rehearse, and perform a mainstage production for the Theatre UNB season, under the direction of the instructor. Rehearsal and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of DRAM 2175 and ENGL 2175. *Prerequisite:* Students must have either completed or be concurrently enrolled in DRAM 1173, ENGL 1173, DRAM 2173, or ENGL 2173.

DRAM3170   Advanced Drama Production   6 ch (3 hours/wk
(Cross-Listed: ENGL 3170)   plus practical work)

A project-based course that builds on DRAM 2173/ENGL 2173 and DRAM 2174/ENGL 2174 by offering advanced training in acting, directing, and design for the theatre. Instruction centres on 1-2 full-scale theatre productions mounted by the class for Theatre UNB. Rehearsal, workshop, and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of DRAM 3170 and ENGL 3170. *Prerequisites:* DRAM 2173 (or ENGL 2173) *and* DRAM 2174 (or ENGL 2174), or equivalent.

DRAM3175   Mainstage Production II   3 ch (3 hours/wk
(Cross-Listed: ENGL 3175)   plus practical work)

Building on the skills developed in DRAM 2175/ENGL 2175, participants in this course form a theatre company and produce, rehearse, and perform a mainstage production for the Theatre UNB season, under the direction of the instructor. Rehearsal and performance time additional to regular class hours required. Permission of the instructor is required. **NOTE:** Students can obtain credit for only *one* of DRAM 3175 and ENGL 3175. *Prerequisites:* DRAM 2175 (or ENGL 2175), or *both* DRAM 2173 (or ENGL 2173) *and* DRAM 2174 (or ENGL 2174).

DRAM4170   Thesis Production and   6 ch (practical work)
Independent Project
(Cross-Listed: ENGL 4170)

Open to students completing the final year of a Double Major or Minor in Drama. Working in groups, students produce a full-scale production for Theatre UNB. The second requirement for the course is to complete an independent project designed to further students' knowledge of a theatre discipline of their choice. Both halves of the course are completed under the supervision of the Director of Drama. **NOTE**: Students can take no more than 6ch of DRAM 4170 (or ENGL 4170), DRAM 4173 (or ENGL 4173), and DRAM 4174 (or ENGL 4174) for credit. *Prerequisites:* DRAM 2173 (or ENGL 2173) and DRAM 2174 (or ENGL 2174) and DRAM 3170 (or ENGL 3170), and permission of the Director of Drama.

DRAM4173   Thesis Production   3 ch (practical work)
(Cross-Listed: ENGL 4173)

Open to students completing the final year of a Double Major or Minor in Drama. Working in groups, students produce a full-scale production for Theatre UNB, under the supervision of the Director of Drama. **NOTE**: Students can obtain credit for only *one* of DRAM 4173, ENGL 4173, DRAM 4170, and ENGL 4170. *Prerequisites:* DRAM 2173 (or ENGL 2173) and DRAM 2174 (or ENGL 2174) and DRAM 3170 (or ENGL 3170), and permission of the Director of Drama.

DRAM4174   Independent Drama Project   3 ch (practical work)
(Cross-Listed: ENGL 4174)

Open to students completing the final year of a Double Major or Minor in Drama. Under the supervision of the Director of Drama, students complete an independent project designed to further their knowledge of a theatre discipline of their choice. **NOTE**: Students can obtain credit for only *one* of DRAM 4174, ENGL 4174, DRAM 4170, and ENGL 4170. *Prerequisites:* DRAM 2173 (or ENGL 2173) and DRAM 2174 (or ENGL 2174) and DRAM 3170 (or ENGL 3170), and permission of the Director of Drama.

EARTH SCIENCES

Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is normal part of the final year of that program, and is being taken for the first time in their final year. **NOTE**: See beginning of Section H for abbreviations, course numbers and coding.

ESCI1001   The Earth: Its Origin, Evolution and Age   3 ch (3C)

Novas and Supernovas, Solar Nebula Theory, Catastrophism and Uniformitarianism. Earth as a heat engine. Origin, growth and main features of the Earth's crust. Origin and evolution of oceans, continents and the atmosphere. The rock cycle, seafloor spreading, plate tectonics, mountain building and deformation of the Earth's crust, earthquakes, igneous and metamorphic processes and their products. Surficial processes, hydrogeology and energy, and mineral recourses. Credit can be obtained for only one of ESCI 1001 or ESCI 1063.

ESCI1006   Introduction to Geology Laboratory   2 ch (3L)

A laboratory course designed to accompany ESCI 1001. An introductory study covering topographic and geological maps (bedrock and surficial) and their interpretation; construction of cross sections; identification of

common minerals, igneous, sedimentary and metamorphic rocks; geological structures (map analysis as a predictive tool); radiometric and relative age dating and the geological time scale; coastal processes; glaciations and glacial deposits; aspects of plate tectonics. *Pre-* or *Co-requisite*: ESCI 1001.

ESCI1012   **Environmental Earth Sciences**   **3 ch (3C)**

From the perspective of Earth System Sciences the course explores geologic processes active on and in the Earth, and human interactions with them. Viewing the oceans, lands, and atmosphere as an integrated system, the course examines geologic aspects of plate tectonics, the development and evolution of life, processes that maintain or threaten habitability, climate change, geological hazards and theories for critical events in Earth history such as mass extinctions. The emphasis is on changes occurring during the current period of human influence with respect to development of energy and natural resources: the Anthropocene.

ESCI1017   Introductory Environmental Earth Sciences Lab   2 ch (3L)

An introductory laboratory course that provides practical laboratory experiences related to practicing Environmental Geology. The lab uses a mixture of written exercises, hands-on activities, satellite and Google Earth explorations. Specific topics may include: tectonic processes and earthquakes, earth materials and geological time, paleontology, volcanoes and volcanic hazards, river floods and groundwater, mass wasting and landslides. *Pre-* or *Co-requisite*: ESCI 1012.

ESCI1026   **Geology Lab for Engineers**   **2 ch (3L)**

An introductory study covering topographic and geological maps (bedrock and surficial) and their interpretation; construction of cross sections; identification of common minerals, igneous, sedimentary and metamorphic rocks; geological structures (map analysis as a predictive tool); dating and the geological time scale; coastal processes; mass wasting (especially the recognition and amelioration of hazards related to debris flows, avalanche and landslides); and glaciations and glacial deposits (especially glacial deposits in eastern Canada and their significance to engineers). *Pre-* or *Co-requisite*: ESCI 1012.

ESCI1036   **Geology Lab for Foresters**   **2 ch (3L)**

An introductory study covering topographic and geological maps (bedrock and surficial) and their interpretation; construction of cross sections; identification of common minerals, igneous, sedimentary and metamorphic rocks; geological structures; dating and the geological time scale; coastal processes; mass wasting (in terrane analysis, and the recognition and avoidance of hazards); and glaciations and glacial deposits (especially in eastern Canada and their relevance to foresters).

ESCI1063   There Is No Planet B – Understanding How the   3 ch (3C)
Earth System Works

Earth is a complex system in which humans and the rest of the biosphere interact with the rocks that from the earth, the oceans, rivers and lakes that form hydrosphere and the gases that form that atmosphere. In this course we will examine the how human interactions cause changes in the earth system and how the earth affects humans. We will examine some topical issues including human effects on earth's atmosphere and ocean system, our use of energy and mineral resources and the impacts of geological hazards such as earthquakes and volcanoes on humanity. Designed primarily for students in faculties other than Science, Engineering and Forestry and Environmental Management. Cannot be used for credit in place of, or after taking ESCI 1001 or ESCI 1012.

ESCI1703   **Field School (1 week)**   **3 ch [W]**

Introduction to field observations, traversing, sampling and mapping in the first week of May or before classes begin in the fall. Accommodation expenses (Fredericton) paid by the student. *Prerequisites:* One of ESCI 1006, ESCI 1026 or ESCI 1036 and one of ESCI 1001 or ESCI 1012 or approved equivalent or permission of the instructor.

ESCI2022   **Engineering Geology**   **4 ch (3C 3L)**

A study of geological materials and hazards for site investigation and assessment of risk and remediation; engineering classification of geological materials, properties and relationships; engineering in the existing and changing environment and exacerbation of natural processes; geological constraints for construction, foundations, tunnelling, waste disposal and mining, with case histories of geological problems in engineering projects. *Prerequisite:* ESCI 1001, ESCI 1026 or equivalent or permission of the instructor.

ESCI2131   **Earth and Planetary Materials**   **4 ch (3C 3L) [W]**

Appraisal of rock-forming materials for Earth and similar solid planetary bodies. Fundamentals of mineralogy, with emphasis on crustal and mantle silicates. Controls on mineral structure and composition related to temperature, pressure and chemistry. Laboratories focus on describing the physical properties of the more common minerals, their identification

in hand specimen, determining their structural formulae and appraising their economic value. *Pre-or Co-requisites*: ESCI 1001, one of ESCI 1006, ESCI 1026 or ESCI 1036. *Recommended Co-requisite*: ESCI 2211.

ESCI2142   **Mineralogy and Petrology**   **4 ch (3C 3L)**

We learn the use of polarizing microscopy techniques to identify and describe the textures of igneous, metamorphic, and sedimentary rocks, mineral and rock identification, and rock classification. Lectures also focus on concepts of mineral nucleation and growth, simple thermodynamic controls on mineral stability, and the kinetic parameters that control crystallization rates of rocks and minerals. The laboratories focus on the practical aspects of mineral and rock description and identification using polarizing microscopy techniques. *Prerequisite:* ESCI 2131.

ESCI2211   **Sedimentology and Stratigraphy**   **4 ch (3C 3L)**

Lectures and labs first cover the description and classification of the physical and chemical properties of sediment and sedimentary rock. This is followed by investigation into the processes (including environmental and engineering impacts) involved in the origin of sediment, such as weathering, physico-chemical, biochemical, and biogenic sediment precipitation, and processes influencing mass movements, sediment erosion, transportation, deposition, reworking, sedimentary structures, soil formation and lithification. The course concludes with an introduction to basic sedimentary facies, stratigraphic principles, and the relative and absolute dating of strata. *Pre- or Co-requisites*: ESCI 1001, one of ESCI 1006, ESCI 1026 or ESCI 1036. *Recommended Co-requisite*: ESCI 2131.

ESCI2321   **Structural Geology I**   **4 ch (3C 3L)**

An introduction to geometrical aspects of earth sciences with emphasis on cartographic methods, geological map production and interpretation, and basic compass techniques. Geological map studies are supported by an introduction to lithological assemblages, tectonic structures (faults and fold patterns), Earth architecture and the tectonic evolution of North America. *Prerequisites*: ESCI 2131, ESCI 2211.

ESCI2522   **Theory of the Earth**   **3 ch (3L)**

Understanding the origin and evolution of the earth requires an interdisciplinary approach that combines traditional geology with cosmochemistry, geochemistry and geophysics. This course comprises three interlinked themes. First, the origin of the planets of our solar system with a focus on the geochemical evolution of the earth - moon system. Second, an examination of the geophysical and geochemical methods by which we determine the earth's internal and external structure, composition and mineralogy. Finally, we bring together earth chemistry and physics to explain how the earth works within the plate tectonic paradigm. *Prerequisites*: ESCI 1001 and either ESCI 1006 or ESCI 1026 or equivalent.

ESCI2602   **Principles of Geochemistry**   **4 ch (3C 1T) [W]**

Origin of elements. Theories of the origin and chemical evolution of the earth, atmosphere, and oceans. Laws governing the distribution of elements in the earth. Application of phase diagrams to petrologic problems of the crust and mantle. Chemical weathering. Use of stable and radioactive isotopes in geology. Geobarometry and geothermometry. Hydrothermal process and base-metal ore deposits. *Prerequisites:* CHEM 1012, CHEM 1017 (or equivalent), MATH 1013 or MATH 1063, ESCI 1001, and ESCI 1006, ESCI 1026, or ESCI 1036. *Co-requisite*: ESCI 2131.

ESCI2703   **Field School (2 weeks)**   **5 ch (field school) [W]**

Principles of stratigraphy and geological mapping. Provides two weeks supervised training in field work and preparation of stratigraphic sections, geological maps, and cross sections. At least the cost of accommodation expenses is paid by the student. *Prerequisites:* ESCI 2131, ESCI 2211, ESCI 2321.

ESCI3131   Origin of Igneous and Metamorphic Rocks   4 ch (2C 3L) [W]

Petrology of igneous and metamorphic rocks with emphasis on their macroscopic textures, mineral associations, classification and field relations. Laboratories concentrate on the identification of the common igneous and metamorphic rocks using hand specimens and thin sections. *Prerequisites:* ESCI 2142, ESCI 2602.

ESCI3271   **Paleontology (Cross-Listed: BIOL 3371)**   **4 ch (2C, 3L)**

The course provides an overview of the evolution of life on Earth, its origin, diversification and its gradual expansion from sea to land. Focus is on the processes leading to fossilization and on the major events of the evolution of life. Students are introduced to the taxonomy and ecology of the invertebrate groups most commonly represented in the fossil record, with special attention for the fossilizable parts and their significance towards understanding the evolution of the total biosphere. Further emphasis is on how fossilized remains and traces of organisms can be used in the fields of stratigraphy, paleoecology and paleoclimatology.

Prerequisites: One pairing of either ESCI 1001 and ESCI 1006/ESCI 1026/ESCI 1036, or ESCI 1012 and ESCI 1017. Credit may not be obtained for both ESCI 3271 and BIOL 3371.

ESCI3282   **Introductory Oceanography and**   **4 ch (3C, 2L)**
                 Paleoceanography (A)

The oceans modulate the climate, are key regulators of biogeochemical cycles and support rich and diverse biological habitats. This course is designed to provide an overview of the role and functioning of the modern oceans. This course also introduces students to the latest methods used in paleoceanography (i.e. the study of past oceanic conditions), a domain that has contributed considerably to our understanding of climate functioning and changes. A sample of the topics, related to the chemistry, physics and biology of the oceans that will be discussed includes: thermohaline circulation, dynamics of upwelling zones, tides, El Niño/La Niña and other climate oscillations, biogeochemical cycles, impact of human activities on the oceans (e.g. eutrophication, acidification), tracers and proxies in marine records (e.g. biological tracers and biomarkers, geochemical tracers, etc.). *Prerequisite*: ESCI 3271.

ESCI3292   **Climate and Environmental Change**   **4 ch (3C 2L) [W]**
                 Through Time (A)

An investigation of the turning points in Earth's history from its formation, over the emergence/evolution of life and connected environmental changes, to the eventual appearance of humans. We discuss both paleontological and geological records, examine the mechanisms that steer climatic changes, and put the recent history of Earth's climate into a long-term perspective. *Prerequisites*: ESCI 1001, ESCI 1012, ESCI 1017, one of ESCI 1006, ESCI 1026 or ESCI 1036. *Recommended:* ESCI 2211 and/or ESCI 3271.

ESCI3322   **Structural Geology II**   **4 ch (3C 3L) [W]**

Stress and strain, introduction to deformational behaviour of rocks. Origin of folds, foliations, lineations, joints and faults. Geometrical analysis. Labs will include simple experiments and advanced map problems. *Prerequisites:* ESCI 2321, ESCI 2703. *Recommended*: ESCI 2142.

ESCI3411   **Rock Mechanics**   **4 ch (3C 2L) [W]**

Lectures and labs investigate the deformation and fracture behaviour of rocks when subjected to natural and engineering-imposed stress fields. The concepts of stress, strain, stress-strain relations, and strength are applied to geological materials in laboratory and field settings. The mechanisms involved in the failure of continuous, discontinuous, ductile, and brittle rocks are discussed. Consideration of these subjects is given in the context of various rock engineering applications, including slopes and underground excavations such as mines, tunnels, and caverns. *Prerequisites:* ESCI 2321, or CE 2023, MATH 1013 or MATH 1063, *Recommended*: PHYS 1061, PHYS 1091 or equivalent, ESCI 3322.

ESCI3442   **Geohydrology**   **4 ch (3C 1T) [W]**

An introduction to the global water cycle and water balance, catchment water balance, measurement and estimation of water balance parameters, aspects of sediment transport and erosion, monitoring the distribution of contamination by sediment sampling. Assignments focus on aspects of catchment water balance. Seminars and term papers are based on topics of regional and global importance with respect to water availability and quality. *Prerequisites:* ESCI 1001, ESCI 1012 and one of ESCI 1006 or ESCI 1026.

ESCI3482 Mineral Resources, Economics, and the Environment 3 ch (3C)

This course presents various types of mineral deposit resources, integrated with economic and environmental considerations with impacts related to exploration and mining activity. *Prerequisites:* ESCI 1001, ESCI 1012 and one of ESCI 1006, ESCI 1026 or ESCI 1036.

ESCI3492   **Petroleum Geology, Carbon Cycle**   **3 ch (3C)**
                 & the Environment (A)

A multi-disciplinary study of petroleum and its role in global carbon cycles: its chemical composition, distribution (rock types, sedimentology and heterogeneity of reservoir rocks, subsurface conditions, overpressures), theories of petroleum generation, migration, trapping and accumulation. Aspects of petroleum industry reviewed, including exploration and development of conventional and unconventional resources (including oil sands and shale gas); development economics; Canadian and global petroleum resources and declining reserves. The environmental impact of petroleum industry (groundwater, surface, and atmospheric pollution, and global warming), mitigation (carbon capture and storage/conversion), and alternative energy options are discussed. *Prerequisites:* ESCI 1001, ESCI 1012, and one of ESCI 1006, ESCI 1026, or ESCI 1036. *Recommended:* ESCI 2211, ESCI 2321.

ESCI3621   **Exploration Geochemistry (O)**   **4 ch (3C 3L)**

Application of geochemistry to mineral exploration. Distribution and controls on element migration in rocks and soils. Recognition of anomalous concentrations. Selected case histories. Common analytical methods for rock, soil, and water samples. *Prerequisite:* ESCI 2602.

ESCI3631   **Geochemistry of Natural Waters (A)**   **4 ch (3C 3L) [W]**

The principles of chemical equilibria, reaction kinetics and transport applied to natural water systems. Chemical weathering and diagenesis. Chemistry of surface waters, ground water and the oceans. Geochemical cycles. Applications to environmental problems. Labs include chemical analysis of water, carbonate equilibria and geochemic modeling. One Saturday field trip. *Prerequisite:* ESCI 2602 or permission of instructor.

ESCI3703   **Field School (2 weeks)**   **5 ch (field school) [W]**

Principles of structural geology and geological mapping. Provides two weeks supervised training in field work and preparation of an independent structural map and report of a selected area. At least the costs of accommodation expenses are paid by the student. To be taken as part of the final year. *Prerequisites:* ESCI 2142, ESCI 2703, ESCI 3322.

ESCI3713   **Geoenvironmental Field School**   **5 ch (field school) [W]**
                 (2 weeks)

Applications of geological, geochemical, geophysical and hydrological methods to an environmental site investigation. Typically includes one week of field work followed by one week for the analysis of data and preparation of a comprehensive written report summarizing the field investigation, synthesizing results, drawing conclusions, and making recommendations. A cost will be associated with this course. *Prerequisites:* ESCI 2703, or permission of the instructor, ESCI 3442, ESCI 3631.

ESCI3803   **Work Term Report I**   **CR**

A written report on the scientific activities of the work term. Credit for the course is dependent in part on the employer's evaluation of the student's work activities. Students must be accepted into the Geology Co-op program to register for this course.

ESCI4112   **Igneous and Metamorphic Petrogenesis (A) 4 ch (2C 3L) [W]**

Study of igneous and metamorphic rocks emphasizing the processes responsible for their formation in terms of heat, pressure and fluid effects related to tectonic setting. Laboratories primarily concentrate on the acquisition of observational skills via hand specimens and detailed petrographic work supported by interpretation of geochemical and isotopic datasets. *Prerequisite:* ESCI 3131.

ESCI4152   **Volcanology (O)**   **4 ch (2C 3L)**

Physical volcanology, textural, petrologic, and petrogenetic study of ultramafic to felsic volcanic systems in a variety of tectonic environments are examined. Emphasis on magma/melt properties, phase relations and composition, crystallization processes, and gas exsolution and groundwater interaction processes are key. Laboratory studies emphasize petrology of volcanic and volcanoclastic rocks in a variety of geological settings. *Prerequisite:* ESCI 3131.

ESCI4212   **Sedimentary Environments, Landforms, and**   **4 ch (3C 3L)**
                 Sequences (A)

Lectures focus on processes active in modern sedimentary environments, landform development, and facies (e.g., rivers, lakes, deltas, estuaries, beaches, barrier islands, shallow and deep oceans); and their interpretation and successions in the geologic record (sequence stratigraphy). Labs cover microscopic examination of sedimentary diagenesis, introductory air photo/image analysis and interpretation, and exercises relating to paleogeography, sea-/lake-level change, and (sequence-) stratigraphic correlation. *Prerequisites:* ESCI 2142, ESCI 2211. *Recommended*: ESCI 3271.

ESCI4312   **Geotectonics**   **3 ch (3C/S/T)**

Seminar course investigating the principles of crustal growth and recycling, plate tectonics, plate motions, plate margin processes, mantle anisotropy, and their application to Phanerozoic, Proterozoic, and Archean mantle and lithosphere evolution. *Prerequisites:* ESCI 3131, ESCI 3322.

ESCI4322   **Flow of Rocks (O)**   **4 ch (2C 3L)**

Application of material science to rock deformation. Theory of rock deformation. Development of microstructure and fabric in deformed rock. Labs will be concerned with observation and measurement of microstructure and fabric. *Prerequisites:* ESCI 2211, ESCI 3322.

ESCI4401   **Applied Glacial Geology**   **4 ch (3C 3L) [W]**

Study of the mass balance of glaciers and characteristics of flow, erosion and deposition by active and stagnant ice masses, facies relationships in processes and products of glaciated terrain, and assessment of terrain from air photos, maps, geophysical and core data. Practical applications include: relevance of sample collection and analyses for geotechnical evaluation and mineral prospecting, and identification of industrial

resources and terrain hazards. *Prerequisites:* ESCI 2211, ESCI 2321 or permission of the instructor.

ESCI4412   Applied Rock Mechanics (O)   4 ch (3C 2L) [W]

Lectures and labs investigate applications of rock mechanics and rock engineering principles, using geological and geomechanical data in the open-ended design of surface and underground engineering structures sited in rocks, as well as geo-hazard mitigation. Analysis of design problems incorporates several industry standard software packages. The natural variability of geomaterials and implications for effective design solutions are discussed. *Prerequisite:* ESCI 3411. Equivalent to GE 4412.

ESCI4452   Environmental Impact Assessment (A)   4 ch (3C 1T)

Introduction to environmental impact assessment (EIA) from the Canadian perspective, covering the history, scope and need for EIA, as well as the general approach and regulatory framework used in Canada and New Brunswick. The majority of the course focuses on geosciences in environmental investigations. Topics include: goals of investigations; physical processes of dispersion in the atmosphere, surface water, groundwater and glacial systems; important geochemical concepts that influence the transport and fate of contaminants in the environment. *Prerequisite:* ESCI 3442.

ESCI4461   Economic Geology   4 ch (2C 3L)

General features of mineral deposits, their origin, localization and classification, with emphasis on exploration, evaluation and development. *Prerequisites:* ESCI 2142, ESCI 3482, or approval of instructor

ESCI4472   Mineral Resource Exploration Geology (A)   4 ch (2C 3L)

Advanced features of mineral deposits, their origin, localization and classification, with emphasis on exploration, evaluation and development. *Prerequisites:* ESCI 4461, or approval of instructor

ESCI4501   Applied Geophysics I (A)   4 ch (3C 3L)

Introduction to the principles, survey procedures and interpretation techniques of the gravity, magnetic, and gamma radiation methods of geophysical exploration. Applications of these methods to geological mapping, mineral and hydrocarbon exploration, engineering and environmental applications. *Prerequisites:* MATH 1013 or MATH 1063, PHYS 1062 and PHYS 1092 or equivalent. *Recommended:* MATH 2513 or MATH 2013.

ESCI4512   Applied Geophysics II   4 ch (3C 3L)

Introduction to principles, survey procedures and interpretation techniques of electrical, electromagnetic, and seismic methods of geophysical exploration. Applications of these methods to mineral and hydrocarbon exploration as well as engineering and hydrogeological-environmental investigations. *Prerequisites:* MATH 1013 or MATH 1063, PHYS 1062 and PHYS 1092. *Recommended:* MATH 2513 or MATH 2013.

ESCI4612   Isotope Geochemistry (A)   3 ch (3C) [W]

Theory and application of stable and radiogenic isotope geochemistry in geology. Coverage includes radiometric dating, radiogenic and stable isotopic systems in petrology and geochemistry, and applications of radiogenic and stable isotopes to the solution of problems in lithospheric evolution, paleoclimatology and environmental geochemistry. *Prerequisites*: ESCI 2602, ESCI 3131.

ESCI4803   Work Term Report II   CR

A written report on the scientific activities of the work term. Credit for the course is dependent in part on the employer's evaluation of the student's work activities. Students must be accepted into the Geology Co-op program to register for this course. *Prerequisite:* ESCI 3803.

ESCI4900   Thesis Project   8 ch [W]

Students who intend to undertake a thesis project, either as an elective course or as a requirement for an Honours BSc degree, are advised to consult with their intended faculty supervisor near the end of their third year. Students must have CGPA of 3.0 or better. Additional requirements and guidelines for the project can be obtained from the Director of Undergraduate Studies. A written request for admission to the Honours programme and/or for permission to take this course must be submitted by the student to the Departmental Chair no later than the last day to add classes in the fall term of the student's final year; the letter must state the provisional title of the project and the name of the faculty member who has agreed to supervise the project.

ESCI4913   Independent Studies in Geology   3 ch

Advanced studies in a topic in geological sciences. The topic is to be chosen jointly by the student, advisor and Chair of the Department. May be taken for credit more than once. Title of topic will appear on transcript. *Prerequisites:* Third year standing and a GPA of at least 2.5. Permission of the Department.

ECONOMICS

See beginning of Section H for abbreviations, course numbers and coding.

ECON1013   Principles of Microeconomics   3 ch (3C)

Economics studies the way individuals and groups make choices, how those choices are affected by incentives, and whether the resulting social arrangements can be improved by government intervention. Economics divides itself into two halves: micro and macro. Microeconomics focuses on smaller chunks of reality than macroeconomics. It focuses on individuals, firms, and products and seeks to understand (among other things) how prices and wages are determined, the effects of taxation, price ceilings (or price floors) and quotas. Key concepts provide a tool kit to analyze individual and group behaviour and the effects of the public policy. Students with credit in ECON 1001, or ECON 1014 or ECON 1073 may not take this course for credit.

ECON1014   Principles of Microeconomics: 3 ch (3C) [W]
**   Critical Perspectives**

This course is an alternative introduction to microeconomics. The aim is to be less comprehensive than ECON 1013, but to go deeper into the core topics to provide a more thorough critical perspective. In the process, the political and philosophical ideas underlying conventional economic conclusions are examined. The limitations of conventional economic reasoning, and the biases that may exist, are exposed. Students with credit in ECON 1001, or ECON 1013 or ECON 1073 may not take this course for credit.

ECON1023   Principles of Macroeconomics   3 ch (3C)

Economics divides itself into two halves: micro and macro. Macroeconomics is the study of larger chunks of reality than microeconomics, aggregates such as a country's gross national product, its rate of inflation, and its unemployment rate. The standard ('neoclassical') model is constructed to explain interest rates and exchange rates, and helps us understand how the government can stabilize the economy, and the limitations of government policy, in an increasingly globalized world. This model also helps us understand why some countries are rich and others are poor. Students with credit in ECON 1002, or ECON 1024 or ECON 1073 may not take this course for credit.

ECON1024   Principles of Macroeconomics: 3 ch (3C) [W]
**   Critical Perspectives**

This course is an alternative introduction to macroeconomics. As in ECON 1023, the standard 'neoclassical' model is presented and explained. While this model has long been criticized by heterodox economists - those in other schools of thought than the neoclassical school - there was until recently a consensus within the neoclassical school itself. The 2007 financial meltdown, and the subsequent Great Recession, has changed that. This course exposes students to the ongoing debates, their historical roots, and their political implications. Students with credit in ECON 1002, or ECON 1023 or ECON 1073 may not take this course for credit.

ECON1073   Economics for Engineers   3 ch (3C)

An introductory course designed for students in engineering and computer science programs. Topics covered include price, production and cost theory; aggregate supply, aggregate demand; money and banking; public finance; and international economics. Open only to engineering and computer science students. Students who take this course may not take any other first year economics course for credit.

ECON2008   The Chinese Economy in Transition (O)   3 ch (3C)

This course surveys the working of the contemporary Chinese economy in its various aspects. Topics to be covered include the background to China's economic reform and its process, China's economic transition, factors contributing to China's fast economic growth, economic institutions, economic policy, and economic issues in contemporary China.

ECON2009   Understanding Economics through Film (O)   3 ch (3C) [W]

This course develops a vocabulary and a set of tools to analyse films, and utilizes the motion picture to establish the context for teaching economics concepts. Plots and subplots of selected films are used to illustrate problems and issues that are amenable to economic analysis. Through a combination of readings, lectures, discussion and films, students will develop a set of skills characterized as an economic way of thinking. The course is designed for undergraduates with no previous economic training.

ECON2203   Introduction to Economic Governance   3 ch (3C) [W]

This course introduces students to the role and functions of the public sector in the economic system. Topics include the rationale for government activities, the emergence of public/private collaborative

initiatives, the impact of specific government programs, overall fiscal policy and government stabilization programs, policies designed to stimulate economic growth, and policies designed to protect the environment. These policies are considered in the context of intergovernmental fiscal relations and the inherent potential for conflict between different levels of government.

ECON3013   Intermediate Microeconomics   3 ch (3C)

Microeconomics has two main purposes. First, it is a foundation course in the study of economics; it provides the essential building blocks for higher level economics and finance courses. Second, microeconomics can be directly applied to help solve the day-to-day decisions of business managers; issues such as pricing, production, advertising, and strategic interaction. It achieves this through extensive use of real-world examples and short case studies. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or, ECON 1014), or ECON 1073.

ECON3015   The Economics of Strategic Thinking   3 ch (3C)

Strategic thinking is the art of outdoing an adversary, knowing that the adversary is trying to do the same to you. All of us must practice strategic thinking at work as well as in everyday life. As a business manager, political adviser, lawyer and in the day-to-day pursuits of life (such as buying a car) you will be trying to win the competition. This unit is about the basic principles students can adopt in the attempt to become a better competitive strategist in business and daily life. The unit draws these principles from the fields of business, politics, law, sports, warfare, fiction and modern art forms such as the movies. *Prerequisite:* First-year microeconomics (ECON 1001, ECON 1013, ECON 1014, ECON 1073), or permission of the instructor.

ECON3016   Introduction to Development Economics   3 ch (3C)

This course introduces students to the models and concepts relevant to understanding major challenges and economic policy analysis in developing and transitional economics. The course examines the similarities and differences of economic issues in developed, developing, and transitional economies. *Prerequisites:* ECON 1013 and ECON 1023.

ECON3017   Canadian Economic Development   3 ch (3C)

This course examines the growth and development of the Canadian economy in relation to the endowment with natural resources, changing market conditions, institutions and technology. These concepts are applied to the evolution and role of public policy in Canada and the roots of regionalism in Canada. *Prerequisite:* Some background in Economics, preferably ECON 1013 and ECON 1023.

ECON3023   Intermediate Macroeconomics   3 ch (3C)

Macroeconomics seeks to understand the way in which national economies function, and the way they interact with each other at the international level. Key questions are: the determination of a country's standard of living and rate of growth; the causes of recessions, unemployment, and inflation; the determinants of exchange rates and the benefits (or costs) of currency unions; and the determinants of interest rates. This course is an essential building block for higher level study in economics and finance, and is indispensable for understanding stock markets and financial investment. *Prerequisite:* 3 ch of first-year macroeconomics (ECON 1002, or ECON 1023, or ECON 1024), or ECON 1073.

ECON3055   Public Policy Analysis   3 ch (3C)

Introduces public policy analysis from an economic perspective. It covers both microeconomic policy (how and why governments intervene in the marketplace, and the criteria for such intervention) and macroeconomic policy (whether actual stabilization policies are effective). It develops the necessary tools to discuss public policy, and applies them to various sub-fields (such as labour, taxation, government, spending, trade, monopoly, fisheries, etc.). The discussion is located in the Canadian context: the assignment of government functions in our Constitution, and fiscal federalism. *Prerequisites:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014) and 3 ch of first-year macroeconomics (ECON 1002, or ECON 1023, or ECON 1024), or ECON 1073.

ECON3103   Introduction to Money and Banking   3 ch (3C)

Introduces theory of money, history of monetary systems, deposit creation, central and commercial banking, monetary policy and foreign exchange. *Prerequisite:* 3 ch of first-year macroeconomics (ECON or 1002, or ECON 1023, or ECON 1024), or ECON 1073.

ECON3203   Public Finance Analysis   3 ch (3C)

Analyzes federal, provincial, and local expenditure and taxation by governments. Both theory and evidence (with an emphasis on Canadian institutions) are emphasized. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073.

ECON3204   The Taxation of Personal Income: 3 ch (3C)
Principles and Practice (O)

The taxation of personal income in Canada. Topics include the concept of taxable income; capital gains; dividends; deduction vs credits; tax rates; economic efficiency and equity; alternative forms of taxation. This course also examines the Canadian tax treatment of personal income in detail. *Prerequisite:* First-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014 or ECON 1073), or permission of the instructor.

ECON3205   The Taxation of Business Income: 3 ch
Principles and Practice (O)

The taxation of corporate income in Canada. Topics include the structure of the corporate tax system; the concept of integration; typical tax planning strategies. Taxation of partnerships and trusts will be discussed briefly. The course also discusses the Canadian tax system in detail. *Prerequisite:* ECON 3204.

ECON3401   International Economics: Trade   3 ch (3C)

Introduces the theory of international trade. Topics include mercantilism, comparative advantage, gains from trade, terms of trade, factor endowment and industrial organization models of trade, income distribution effects of trade, international movements of capital and labour, protectionism, trade agreements and economic development. *Prerequisites:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014) and 3 ch of first-year macroeconomics (ECON 1002, or ECON 1023, or ECON 1024), or ECON 1073. ECON 3013 recommended.

ECON3412   International Economics: Finance   3 ch (3C)

Introduces the financing of trade and capital flows among nations. Topics include balance of payments, foreign exchange markets and exchange rates, macroeconomic policy under fixed and flexible exchange rates, and international monetary systems. *Prerequisites:* 3 ch of first-year microeconomics (ECON 1001, ECON 1013, or ECON 1014) and 3 ch of first-year macroeconomics (ECON 1002, ECON 1023, or ECON 1024), or ECON 1073; ECON 3023 recommended.

ECON3504   Regional Economic Theory and Policy   3 ch (3C)

Concerned with the general theory of regional economic disparities and economic development, and the role of governments (federal and provincial) in alleviating disparities. Emphasizes current problems and policies pertaining to Atlantic Canada. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073.

ECON3505   Information Technology and the   3 ch (3C) [W]
Canadian Economy

Blends economic analysis, economic history and public policy to spotlight the role of economics in the context of the revolution in information technology. Topics include: the structural evolution of the Canadian and regional economies, the emergence of knowledge based industries, the economic costs and benefits of education, the demographic and skill composition of Canada's labour force, the economics of technological change and the contemporary role of the information technology, the impact of information technological developments on human rights, the role of the private and public sectors in the new transnational global economy. *Prerequisite:* First-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014 or ECON 1073), or permission of the instructor.

ECON3601   Business Statistics (Cross-Listed: ADM 2623)   3 ch (3C)

Introduces the methods of data presentation and analysis, and their applications to business problems, including measures of data description, probability concepts and distributions, and statistical design theory. Also considers sampling theorem, hypothesis testing using different techniques. *Prerequisites:* 3 ch, MATH 1823, and MATH 1833 or equivalents. Students may not receive credit for both ECON 3601 and ADM 2632.

ECON3602   Management Science (Cross-Listed: ADM 2624)   3 ch (3C)

Presents a variety of applications of optimization models to business problems such as allocation, blending, and scheduling. Introduces concepts production planning, inventory control, network models and sequencing. *Prerequisite:* ADM 2623. Students may not receive credit for both ECON 3602 and ADM 2624.

ECON3628   Advanced Statistics for Finance   3 ch (3C)
(Cross-Listed: ADM 3628)

Examines theory behind statistical techniques such as analysis of variance, simple and multiple regression, non-parametric methods of estimation and hypothesis testing, and time series analysis. Examines the applications of these techniques to problems in finance and other areas of

business administration. *Prerequisites:* ADM 2623. Students may not receive credit for both ECON 3628 and ADM 3628.

ECON3665   Mathematical Economics I: Economic Analysis   3 ch (3C)

Emphasis is on use of mathematical tools in economic theory. *Prerequisites:* Both first-year microeconomics (ECON 1001, or ECON 1013 or ECON 1014) and first-year macroeconomics (ECON 1002, or ECON 1023 or ECON 1024) or ECON 1073, plus Mathematics requirement for Honours and "A" Majors.

ECON3702   Cost-Benefit Analysis   3 ch (3C) [W]

Principles of cost-benefit analysis including consideration of welfare economics, the treatment of intangibles, non-efficiency considerations, time discounting, evaluation criteria, uncertainty and risk. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073.

ECON3705   Canada and the New Global Economy   3 ch (3C) [W]

This course examines the Canadian economy in the context of the new global economy of the 21st century. Economic theory, economic history and public policy will be the backdrop for a discussion of the trilogy of interactive economic forces that define the new global economy- globalization, trade liberalization and the information technology and communications revolution. *Prerequisite:* First-year microeconomics [ECON 1001, or ECON 1013, or ECON 1014 or ECON 1073].

ECON3724   Economics of Human Resources   3 ch (3C)

How do employers recruit the best employees for the job? How important is money relative to other factors when it comes to hiring and keeping employees? Should good performance on the job be rewarded or should bad performance be penalized? The purpose of this unit is to provide the student with the economic tools of analysis to answer these questions as well as many other important questions in the area of human resource management. Topics include education and training decisions, hiring and turnover, compensation and worker incentives, measuring performance, promotions as a motivator, and team-based production. The analysis of the main issues will be reinforced and complemented with reference to a series of firm-level case studies. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON ECON 1073.

ECON3744   Recreation Economics (O)   3 ch (3C)

Discusses applications of economic principles to outdoor recreation planning and policy decisions. Management and allocation issues are addressed with emphasis on approaches which make outdoor recreation as socially beneficial as possible at the lowest possible cost. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073.

ECON3755   Environmental Economics   3 ch

Examines interaction of ecological and economic systems. Considers population growth and food supply, non-renewable resources, and population. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073, or permission of the instructor.

ECON3766   Economics of Climate Change (A)   3 ch (3C)

Climate change is posing a significant challenge to world economies. This course focuses on valuing the consequences of climate change and assessing the costs of mitigation and adaptation. The efficiency of alternative policy instruments such as carbon taxes, tradable emissions permits, voluntary initiatives, and others are assessed. Existing instruments, such as carbon taxes in British Columbia and carbon credit trading on the Chicago Climate Exchange are reviewed and critiqued. The potential contribution of these instruments to the overall achievement of Kyoto Protocol targets set by various countries is examined. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073, or permission of the instructor.

ECON3775   The Economics of Canadian Immigration   3 ch (3C) [W]

An analysis of the role of international migration on the course of Canadian economic development. *Prerequisites:* Both first-year microeconomics (ECON 1001, or ECON 1013 or ECON 1014) and first-year macroeconomics (ECON 1002, or 1023 or 1024) or ECON 1073.

ECON3801   Economics of Transportation I   3 ch (3C)

Examines the role played by transportation in the location of economic activity and other aspects of economics development. *Prerequisites:* Both first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014) and first-year macroeconomics (ECON 1002, or ECON 1023 or ECON 1024) or ECON 1073.

ECON3815   Introduction to Health Economics   3 ch (3C)

The course discusses applications of economic principles and empirical analysis to health and health policy. It considers such matters as the demand for health care, and the supply of health services - both through health practitioners and hospitals; the economic effects of health insurance, health economic evaluation techniques, and public policy formulation. Emphasis is on Canadian health programs and policies. *Prerequisite:* 3 ch of first-year microeconomics (ECON 1001, or ECON 1013, or ECON 1014), or ECON 1073.

ECON3845   Introduction to Law and Economics   3 ch (3C) [W]

This course applies the tools of economic analysis to the study of legal rules and institutions. Topics and case studies in three core areas of the law - property, contracts, and crime and punishment - are used to illustrate and develop two related ideas. The first is that economic principles have guided significant developments in the evolution of the law in many areas, and an understanding of these economic principles will lead to a better understanding of the law as it is currently practiced. The second is that economic analysis can be used to assess and critique current law from a social perspective, leading to improved public policy evaluation and formation in all areas of civil and criminal law. *Prerequisite:* First-year microeconomics [ECON 1001, or ECON 1013, or ECON 1014 or ECON 1073], or permission of the instructor.

ECON3865   Energy Economics   3 ch (3C)

Applies economic theory to energy issues. Demand for energy and supply of energy are explored in terms of non-renewable and renewable energy resources. Markets for energy resources are discussed. Specific attention is directed to petroleum markets and OPEC behaviour. Public policy issues associated with the energy sector such as the environment and sustainability are addressed. *Prerequisite:* Any first year economics course.

ECON3905 Contemporary Issues in the Canadian Economy 3 ch (3C) [W]

Examines a variety of contemporary economic issues, including inflation, unemployment, economic growth, regional disparity, monetary and fiscal policies, the new international economic order, bilateral and multilateral trade agreements. *Prerequisite:* Any first year economics course.

ECON4013   Advanced Microeconomics   3 ch (3C)

Focuses on advanced theory of choice. Topics include choice under uncertainty, the theory of the firm, oligopoly theories, game theory, general equilibrium, and the distribution of income. *Prerequisites:* ECON 3013 and ECON 3665 or an equivalent to ECON 3665.

ECON4023   Advanced Macroeconomics   3 ch (3C)

Emphasizes core neo-classical theories as well as Keynesian and post-Keynesian models. *Prerequisites:* ECON 3665 (or equivalent) and ECON 3023.

ECON4625   Econometrics I   3 ch (3C)

Introduction to basic econometric techniques for estimating and testing economic models. Topics include: review of basic statistics, the nature of econometric models and economic data, regression analysis, hypothesis testing, and applications. Emphasis is on intuition and applications. *Prerequisites:* Any first year economics course and 6 ch Introductory Statistics (e.g. ECON 3601/ADM 2623 and ECON 3628/ADM 3628).

ECON4665   Mathematical Economics II   3 ch (3C)

Economic applications of optimizing techniques are considered primarily in the context of linear models. *Prerequisites:* ECON 3665, or MATH 2003 and MATH 2013, and ECON 3013.

ECON4673   Introduction to Game Theory (O)   3 ch (3C)
**   (Cross-Listed: MATH 3373)**

Strategic games, n-person games in normal form, dominated strategies, Nash equilibrium, mixed strategies and mixed strategy equilibrium, games with perfect information, games with imperfect information, Bayesian games, extensive games. The course introduces basic non-cooperative game theory and analytical tools for decision makers (consumers, firms, politicians, governments). It is suitable for Mathematics, Economics, Management Science, Political Science, Social Science and Science students or any student with a minor in such disciplines, in particular those in the Mathematics/Statistics-Economics option. *Prerequisites:* MATH 1823 and MATH 1833; or MATH 1003 and MATH 1013; or MATH 1053 and MATH 1063; or ECON 3013; or permission of the instructor.

ECON5013   Topics in Microeconomic Theory   3 ch (3C)

Considers the advanced theory of production and consumer demand, expected utility theory, theory of the market, elements of game theory, general equilibrium and welfare. *Prerequisites:* ECON 3013 and ECON 4013.

ECON5023   **Topics in Macroeconomics**   **3 ch (3C)**

Examines neoclassical, Keynes and Keynesian models, and static, dynamic, equilibrium and disequilibrium models. *Prerequisites:* ECON 4013 and ECON 4023.

ECON5285   **Public Policy Research**   **3 ch (3C)**

This course provides practical experience in public policy analysis through supervised research. Students will complete research projects assigned by the instructor. These projects are policy-oriented and are chosen in consultation with sponsoring agencies. A formal presentation of the results is required at the end of the course. *Prerequisites:* ECON 3013 and ECON 3023 or permission of the instructor.

ECON5515   **Regional Economics**   **3 ch (3C)**

Examines the history and evolution of the New Brunswick and Atlantic economics applying economic theory and measurement approaches intended to describe the determinants of growth and the process of economic adjustment. *Prerequisite:* Some background in economics.

ECON5565   **Economic Geography**   **3 ch (3C)**

The course explores processes driving spatial patterns of economic activity at the global, national, regional, and local scales. Topic areas include economic globalization, spatial distribution of industrial sectors, multinational corporations, international trade, and regional economic development. The course looks a historical and contemporary skills in upper-income as well as low-and middle-income countries.

ECON5616 International Money and Finance: Theory and Policy 3 ch (3C)

The course covers topics in open economy macroeconomics to help students to become critical reader of popular and ongoing debates about the global economy. Topics include international capital flows; exchange rate regimes; theories of speculative attacks and currency crises; causes and consequences of financial crises; predictions of financial crises; stabilization and adjustment; debt crises; international monetary integration; and scope and functions of international monetary agencies. *Prerequisites:* ECON 3013 and ECON 3023 or equivalent courses.

ECON5625   **Econometrics II**   **3 ch (3C)**

Review of matrix algebra. Errors in variables, instrumental variables, simultaneous equations, qualitative and limited dependent variables, dynamic models, model selection criterion, causality, unit roots, single equation cointegration methods. Emphasis is on practical application of simultaneous methods. *Prerequisite:* ECON 4625 or permission of the instructor.

ECON5645   **Applied Econometrics**   **3 ch (3C)**

This course builds on the material covered in ECON 4625, Econometrics I. There are two main objectives to the course: first, to extend the classical model to consider a variety of related topics that are central to data analysis in the social sciences, including discrete and limited dependent variables, lagged dependent variables, panel data, and simultaneous equations; and second, to develop the application of the theory to empirical analysis by considering a variety of real-world examples. *Prerequisite:* ECON 4625.

ECON5724   **Economics of Human Resources**   **3 ch (3C)**

Attention given to the economics of the education process, the theory and implications of innovation, the effects of education and technological change on the distribution of income, and the role of education and technological change in economic growth. *Prerequisites:* ECON 3013 and ECON 3023.

ECON5755   **Environmental Economics II**   **3 ch (3C)**

Applies economic theory to real-world environmental issues. The theory of environmental externalities is first explored. Then various applications are introduced such as environmental valuation techniques, computable general equilibrium modeling, and environmental accounting procedures. Such environmental issues as deforestation, urban air pollution, and water pollution will be covered. *Prerequisite:* ECON 3755 or permission of the instructor.

ECON5805   **Transportation Economics I (A)**   **3 ch (3C)**

This course focuses on basic tools of economic analysis to determine demand and supply in transportation markets. Considerable attention is devoted to the derivation of market and aggregate demand for transportation services as well as to cost functions as determinants of supply of transportation services. Efficient pricing of transportation services is analysed. Investment criteria are reviewed to determine the efficient pricing. Market failures and imperfections of transportation markets are examined. *Prerequisites:* ECON 3013 and ECON 3023.

ECON5815   **Health Economics**   **3 ch (3C)**

The course discusses and analyses the health economics literature. A set of topics will be selected by the instructor for consideration. Likely topics will include demand theory and measurement as applied to health care markets, production and supply theory (in the context of health markets), health economic evaluation methods, managed competition approaches to health care, and public policy analysis. Other topics may be introduced in accordance with the instructor's priorities, or the specific interests of the students. ECON 3013, ECON 3023 or the permission of the instructor. *Prerequisites*: ECON 3013 and ECON 3023 or permission of the instructor.

ECON5825   **Industrial Organization: Theory**   **3 ch (3C)**

Covers welfare economics of competition and monopoly, determinants of industrial structure, theories of industrial pricing, rationalization, technological innovation, and foreign ownership. *Prerequisite:* ECON 3013, or at discretion of instructor.

ECON5835   **Industrial Organization: Policy**   **3 ch (3C)**

Economics of regulation and intervention, anti-combines policy, policy issues concerning the control of mergers, monopoly, predatory pricing, collusion, resale price maintenance. *Prerequisite:* ECON 5825, or at discretion of instructor.

ECON5989   **Topics in Economics I**   **3 ch (R 1S)**

Directed study/reading programs. Workshops or seminars will be held as required. Students should apply to the Department of Economics in September or January for permission to take one of these courses.

ECON5999   **Topics in Economics II**   **3 ch (R 1S)**

Directed study/reading programs. Workshops or seminars will be held as required. Students should apply to the Department of Economics in September or January for permission to take one of these courses.

EDUCATION

ED courses are normally not available to non-education students. Exceptions are ED 4791, ED 3021, ED 3031, ED 3043, ED 3063. See beginning of Section H for abbreviations, course numbers and coding.

ED3011   Professional Ethics for Practitioners of Adult Education   3 ch [W]

Introduction to ethical theory and philosophical approaches to reflective practice emphasizing self-examination, decision making, and ethical standards in the field of adult education. Participants use field experience to support readings and case studies.

ED3015   **Practicum in Adult Education**   **3 ch**

Practical, field-based learning-based on an individualized learning contact and completed in teaching, learning or other appropriate adult education settings such as training, literacy, tutoring, curriculum development, etc. The intent of the practicum is to help learners develop observational, critical and reflective skills as well as skills appropriate to their work with adults.

ED3020   **Practicum**   **6 ch**

This school-based practicum component of the Bachelor of Education in Early Childhood Education involves a six-week term in K-2 in Year 3 .

ED3021   Human Development and Learning: An Overview   3 ch (3C) [W]

Explores developmental perspectives on human growth and learning.

ED3022   First Nations Epistemology (Ways of Knowing) 3 ch (3C) [W]
(Cross-Listed: ABRG 4686)

Development of personal and social identity among children in First Nations communities. Implications for classroom practice.

ED3024   **Understanding the Adult Learner**   **3 ch [W]**

This course will explore what it means to be an adult learner. We will examine adult learning theories, theories of teaching as well as the practice of adult education. The course takes both an historical and contemporary perspective on adult learning.

ED3031   **The Education of Exceptional Learners**   **3 ch [W]**

Provides the student with an introduction to the field of knowledge associated with exceptional learners.

ED3033   **Teaching in a Cultural Context**   **3 ch (3C) [W]**

Explores how teachers respond effectively to the culture of children as individuals and to the culture of their people about a variety of cultural contexts, including Canadian Indigenous cultures.

ED3041   **The Theory and Practice of Education**   **3 ch [W]**

Introduces the dominant theories which influence and shape current thinking and practices in school environments today. Key ideas, their origins, teaching responsibilities, and the components of professional practice are discussed. The course is intended to orient education students to teaching as a profession.

ED3042   **History of Educational Ideas**   **3 ch [W]**

A course designed to inform beginning teachers about the most significant ideas (and the people who originated them) that have influenced the development of contemporary education.

ED3043   **Indigenous Education**   **3 ch [W]**

Explores traditional First Nations pedagogy and concepts of education in comparison with those which have shaped formal schooling. It will further describe roles and responsibilities of schools, teachers, and communities in educating First Nations students.

ED3044   **History of Childhood**   **3 ch [W]**

A course that follows the changing public perception and treatment of children in western society from the Seventeenth Century to the present. Children in Maritime Canada are featured prominently.

ED3051   **School and Organization**   **3 ch [W]**

An overview of the legal, organizational, financial and professional aspects of schools and school systems.

ED3052   **School Law**   **3 ch [W]**

An overview of the legal, organizational, financial and professional aspects of schools and school systems. (Only offered in Trinidad and Tobago)

ED3053   **Wabanaki Schools in New Brunswick**   **3 ch [W]**

Schools in Wabanaki communities are governed differently than provincial schools. The course will explore the governance structures of New Brunswick Wabankai communities, community schools, and their relationships with Federal and Provincial governments.

ED3061   **Students, Schools, Equity and Social Justice**   **3 ch [W]**

Explores the social, economic, cultural, and political contexts of learners' lives, discourses of social difference, equity and social justice. Topics include: ableism, sexism, gender bias, racism, class oppression, transphobia, homophobia, and heterosexism, harassment and violence, and the questions these issues raise for schools, curricula and classroom practice.

ED3063   **Health Promotion in Schools**   **3 ch [W]**

Examines concepts and inter-relationships among nutrition, exercise, and well-being within educational contexts.

ED3110   **Methods and Strategies in Adult Education:**   **6 ch [W]**
An Introduction

Examines key topics in applied terms to prepare new instructors for the first year of teaching. Topics include, planning instructional segments; writing objectives; evaluating students, programs and teaching; using and assessing teaching strategies, audio-visual aids and learning resources. Students will participate in micro-teaching activities.

ED3113   **Communication Practices for Adult Education**   **3 ch [W]**

Identifies general theories of and strategies for oral, written and visual communications. Students will be expected to assess their skill levels in all three areas.

ED3114   **Introduction to Workplace Learning**   **3 ch [W]**

Designed to provide learners with an appreciation of the origins and trends in workplace learning. The course will examine the workplace as a learning environment. Various approaches to adult learning within the changing context of work will be examined.

ED3115   **Methods and Strategies in Adult Education**   **3 ch [W]**
(online version)

This course examines methods and strategies to facilitate effective adult education programs. Topics include, planning instructional segments; writing objectives; evaluating student work, programs and teaching; using and assessing teaching strategies, and learning resources.

ED3211   **Introduction to Art and Creative Education**   **3 ch [W]**

Students will develop an understanding of how and why visual images are a powerful form of communication and creative expression. Through individual media exploration and interactive activities students will increase their visual awareness, creative thinking and art making skills. Learning how to develop meaningful creative art education programs will also be explored. Students may receive credit for ED 3211: Introduction to

Art and Creative Education or ED 5209: Theories and Practices of Visual Arts Education, but not both.

ED3241   **Music for Elementary School Educators**   **3 ch [W]**

Examines methodology, skills and content for the elementary classroom educator to use in teaching music to young learners in a variety of settings. *Students may receive credit for ED 3241: Music for Elementary School Educators or ED 5242: Music for the Classroom Teacher, but not both.

ED3362   **Access to Literacy**   **3 ch [W]**

Although the teaching of reading is regarded as one of the fundamental tasks of the school system, there is relatively little attention paid to what is being read. In this course students will learn: how to find out about books; how to recognize a genuine work of imaginative literature when they encounter one; and how to talk about books among themselves and with children.

ED3415   **Developing Numeracy**   **3 ch [W]**

The study of number relationships and approaches to developing number sense in children and adults.

ED3416   **Developing Geometrical Concepts**   **3 ch [W]**

The study of geometric relationships and approaches to developing spatial sense in children and adults.

ED3475   **Movement Education for the Elementary Teacher**   **3 ch [W]**

Overview of physical education programs in elementary schools. Program planning, practical work.

ED3478 Health and Physical Education in the Elementary School 3 ch [W]

An overview of curriculum, pedagogy and philosophy of health and physical education for elementary school educators. * Students may receive credit for ED 3478: Health and Physical Education for Elementary Schools or ED 5478: Health and Physical Education in the Elementary School, but not both.

ED3511   **Introduction to Science Education**   **3 ch [W]**

An introduction to the teaching of Science.

ED3621   **Introduction to Social Studies**   **3 ch [W]**

Consideration of the history of social studies, debates about the content of social studies and the current state of social studies in Canada.

ED3641   **Geography in Education**   **3 ch [W]**

Scope and purpose of geography in education. Topics of inquiry include: place, space, time, humans, culture and the Anthropocene.

ED3862   **Information and Communication Technology I**   **3 ch [W]**

This course is designed to introduce students to basic concepts and practices in the integration of application software within curriculum-based topics. Emphasis is placed on the development of electronic portfolios of technology- enhanced teaching materials for the classroom.

ED3943   **Introduction to Technology Education**   **3 ch [W]**

Examines the development of technology education as a field of study and explores the context in which technology is taught in schools, applied in industry and its impact on society. Current technology applications are examined in areas such as: transportation, construction, communication, manufacturing and biotechnologies.

ED4000   **Student Teaching for BEd (4 year) Program I**   **18 ch**

Eighteen weeks of school and classroom experience. Additional regulations are included in the Education General Regulations under Field Experiences Practicum (Student Teaching) in Section G of the Calendar. *Prerequisites:* Only students who have been officially admitted to the BEd (4 year) program may register for ED4000. For further information contact the Director of Field Services.

ED4012   **Diversity and Inclusion in Adult Learning**   **3 ch [W]**

This course provides an introduction to diversity and inclusion in adult learning situations. The objectives of this course are to stimulate adult educators' examination of their beliefs about adult education; to explore social justice philosophies and to critically examine an inclusive teaching practice. Topics include the competing purposes of the education, poverty, multiculturalism, anti-racism, gender, sexual orientation, indigenization and decolonization and possibly other related issues at the discretion of the instructor.

ED4021   **Practicum**   **6 ch**

This school-based practicum component of the Bachelor of Education in Early Childhood Education involves a three-week term in K-2 in Year 4.

ED4031 Towards Diversity in the Classroom 3 ch [W]

Examines how schooling reproduces and produces social inequality and explores liberatory pedagogical practices, particularly in relation to dimensions such as class, "race", gender, and sexuality.

ED4032 Adult Learners with Exceptionalities 3 ch [W]

This course examines the nature of exceptionalities in relation to sensory, cognitive, physical, emotional, and learning capabilities, and considers various approaches for meeting the unique needs of these adult learners. The course will broaden participants' exsisting knowledge base and general approaches for meeting the needs of adult learners with exceptionalities.

ED4042 Introduction to Adult Education 3 ch [W]

Examines the development of adult education as a field of practice and explores the characteristics of adult education in a variety of contexts with special emphasis on national and provincial contexts. The principle aim is to develop a basic understanding of adult education in a global context. The focus of the course will be on the socio-historical context of its methods, agencies, programs and issues.

ED4045 Issues in Training and Development 3 ch [W]

Explores theoretical and practical components of workplace training and designed to improve organizational effectiveness and individual performance. Learners examine emergent training topics in a variety of workplace contexts. *Prerequisite:* ED 3024.

ED4054 Research in Early Childhood Studies 3 ch [W]

This course will deepen student knowledge about local, national and international research within the field of early childhood. Students will have the opportunity to evaluate research and prepare a research proposal for a project specific to early years.

ED4061 Advising and Mentoring Adult Learners 3 ch [W]

Examines the characteristics of helping relationships in educational and work settings. Focus will be on the development of skills and strategies conducive to effective advising, coaching and mentoring through collaborative learning, reflection and practice. *Prerequisites:* ED 3024.

ED4089 Gifted Education: Introduction 3 ch [W]

The identification, development and approach to the gifted and talented are examined in terms of their intellectual, social and emotional characteristics.

ED4102 Transition to Adulthood 3 ch [W]

This could will explore the nature and consequences of the transition from adolescence to adulthood, and from full-time attendance in formal education programs to adult work and life roles. The course examines the relevance of learning and education to these transitions and give insight into the complex nature of adulthood and aging in our time and in different cultures.

ED4110 Methods and Strategies in Adult Education: 6 ch [W]
Theory and Practice

Based on learners' needs, interests and experience, theoretical and practical components of instructional strategies are explored in-depth. Particular attention is paid to the integration of instructional methods and strategies with adult learning models.

ED4113 Introduction to Distance Learning in Adult Education 3 ch [W]

Provides an opportunity to explore and become familiar with currently available learning technologies to deliver distance education programs and courses. Use of these technologies will be required throughout the course.

ED4115 Issues in Adult Literacy 3 ch [W]

This course provides and introduction to adult literacy education as well as critically examining the research and theory about adult literacies. Adult learning principles, instructional strategies and techniques that are used to develop adult literacy skills will be examined. Course topics include, but are not limited to, digital literacy, barriers to literacy, the development of language and literacy skills in groups, as well as literacy coaching.

ED4164 Techniques of Teaching 3 ch

Students will learn to design lessons following lecture, Socratic discussion, or combination formats and learn the appropriateness of each. Classroom skills of positioning, elocution, questioning, listening, eye contact, and so on will be learned and practised in mini-teaching sessions in front of small peer groups. Causes of student behaviour problems will be analyzed and strategies for dealing with disruptive students developed.

ED4191 Independent Studies 3 ch [W]

Students will normally be limited to 6 ch of independent study.
Prerequisite: Permission of an instructor is required before registration.

ED4361 Multi Modal Literacies in Early Childhood Education 3 ch [W]

This course will investigate the symbols and tools of digital literacies, play, math, art, music and print.

ED4363 Children's Literature Singing, Poetry and Performance 3 ch [W]

This course will introduce students to the multi model world of childrens literature through the study of authors, poets and illustrators, and the art of storytelling, singing and poetry performance with young children.

ED4451 Health Education 3 ch [W]

Examines curriculum and pedagogy in a range of elementary, middle and secondary school programs that come under the rubric of health education. Includes analyses of underlying assumptions, the organization of knowledge, and pedagogical approaches to this subject area.

ED4452 Health, Equity and Well-Being 3 ch [W]

In this course, we will unpack complex understandings of what it means for educators to embrace equitable practices in the interests iof children's health, well-being, and belonging. Course topics include diverse abilities, mental and physical health, social responsibility, and self-care. We will explore socially inclusive and culturally sensitive learning environments and how democratic and sustainable practices are nurtured.

ED4568 La littératie à l'élémentaire I 3 ch [W]

Dans ce cours, vous aurez l'occasion de vous familiariser avec les principes et les pratiques de la littératie en français seconde à l'élémentaire. Vous explorez l'approche de la littératie équilibrée, les pratiques exemplaires et les stratégies qui favorisent l'enseignement du français et l'enseignement des matières en français. * A required course for elementary French second language specialists. *Prerequisites*: A French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED4569 La littératie à l'élémentaire II 3 ch (3C) [W]

Dans ce cours, vous aurez l'occasion d'approfondir vos connaissances de la pédagogie de la littératie en français langue seconde à l'élémentaire. Vous aurez l'occasion de developer et d'essayer des pratiques et des stratégies qui favorisent l'enseignement et l'évaluation du français dans divers programmes et l'integration de la littératie dans l'enseignement des matières en immersion. *A required course for elementary French second language specialists. *Prerequisites*: ED 4568 and a French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED4621 Learning to Learn about Teaching, Social Studies 3 ch [W]
and Science

Elementary school prospective teachers will explore the notion of teaching and learning a discipline through the study of teaching social studies and science.

ED4643 Geography of Canada 3 ch [W]

Investigation of pedagogical approaches to settlement patterns, urbanization, resource development, land use and economic characteristics of the various regions. Attention given to applications in the New Brunswick school curriculum.

ED4685 Treaty Education 3 ch [W]

Provides students with knowledge of of the Indigenous understanding of the treaties signed between Indigenous peoples and the British and Canadian governments between the 18th and 20th centuries and the Peace and Friendship Treaties signed in the Maritimes in the 18th century specifically. It will also help students think about how to convey the history of treaty-making and the competing understandings of the treaties and that promotes reconciliation.

ED4686 Teaching First Nations Learner 3 ch [W]

Teaching methods, learning strategies, program planning, with emphasis on a particular learning level.

ED4688 Teaching First Nations Children's Literature 3 ch [W]

Examines the philosophy and process of teaching First Nations Literature in an integrated curriculum for primary and elementary children. Includes practical classroom experience.

ED4791 Nutrition Concepts 3 ch (3C) [W]

An examination of nutrients in the human diet, the relationship between diet and health, nutritional assessment, nutrition education, dietary

guidance and current nutrition issues. **NOTE**: Credit will not be given for both ED 4791 and KIN 3481.

ED4862   Information and Communication Technology II   3 ch [W]

An advanced course in the integration of ICT in the classroom. Students should have previously taken ED 3862 or be able to demonstrate sufficient background knowledge in application software. Focus will also include emerging trends in educational technologies.

ED4863   Computers in Classroom   3 ch [W]

This course will study current research and practices in the integration of computer technology in Business Education, ICT, and other subject areas. Students are required to demonstrate best practices in the areas of using computers as a tool, tutor and tutee in education in the development and presentation of technology enriched lessons within their area of curriculum.

ED4864   Educational Software Analysis   3 ch (3C) [W]

This course is designed to examine current trends and research in educational software evaluation. Students will focus on both curriculum-based software as well as administrative applications intended for professional use in and out of the classroom.

ED4973   Special Topics in Technology Education   3 ch (3C) [W]

Research of current and emerging trends and development in technology, Technology Education and educational/instructional technology.

ED5000   Field Studies Practicum   15 ch

Fifteen weeks of school experience. Individuals applying to completed 5000 must have completed a post-degree Bachelor of Education.

ED5001   Teaching and Learning Theories I   2 ch [W]

This course introduces teaching as a reflective, professional practice focused upon three themes: Learning and Learners; Establishing a Classroom Context to Support Learning; and Professional Concerns for Teachers. Field experience is central to the course with students expected to apply course ideas in classroom and reflect on that experience in seminars.

ED5002   Teaching and Learning Theories II   2 ch [W]

This course continues the examination of teaching as a reflective, professional practice focused upon three themes: Learning and Learners; Establishing a Classroom Context to Support Learning; and Professional Concerns for Teachers. Field experience is central to the course with students expected to apply course ideas in classroom and reflect on that experience in seminars.

ED5003   Teaching and Learning Theories III   2 ch [W]

As a culmination of Teaching and Learning Theory I and II, this course will facilitate students integrating their personal backgrounds, academic and professional education through the development of a significant project. Projects will be shared with peers as well as the broader professional and public community in a senior conference.

ED5010   Advanced Practicum in Adult Education   6 ch

A practical, field-based learning experience in which learners will apply and practice previously acquired adult education principles and practices and will monitor themselves through using mentoring, collaboration, and peer consultation. *Prerequisites:* Practicum in Adult Education, or its equivalent.

ED5011   Preparing for Prior Learning Assessment   3 ch [W]

Through the use of reflection, self-assessment and personal journals, participants will create an experience-based dossier which will describe their personal philosophy, current professional practices, and needs for further learning. *Prerequisite:* ED 3024 or equivalent.

ED5013   Special Topics in Education   3 ch [W]

In consultation with faculty advisor. (Intended for students in the DAUS.)

ED5022   Transformative Learning   3 ch [W]

Explores new concepts for working with adult learners. Investigates critical thinking, critical self-reflection and transformative learning. *Prerequisites:* ED 3024 or equivalent.

ED5031   Creating Supportive Environments for Learning   3 ch [W]

Examines theory and practice related to learning environments and strategies for dealing with behaviour challenges and for children with various types of special needs.

ED5032   Inclusion from Early Years   3 ch [W]

An examination of personal, societal and school assumptions about the meaning and importance of inclusion in life and learning from childhood. Inclusive models of education will be examined.

ED5033   Special Topics in Education   3 ch [W]

In consultation with faculty advisor. (Intended for students in the DAUS.)

ED5035   Inclusionary Practices   3 ch (3C) [W]

This course is designed to enhance prospective teachers' knowledge of diverse student learning needs and specific strategies for enhancing the learning environment for all students.

ED5043   Special Topics in Education   3 ch (3C) [W]

In consultation with faculty advisor. (Intended for students in the DAUS.)

ED5044   The School and Society   3 ch [W]

Study of Interrelationships between community, students and schools.

ED5045   Philosophies of Education   3 ch [W]

A study of various contemporary formulations of the meaning, aims, methods, and purposes of education, as well as the theories of human nature from which they are drawn.

ED5046   Educating At-Risk Students   3 ch [W]

Characteristics of the at-risk student. Psychological, social, and economic effects of dropping out. Remedial strategies involving learning, teaching, counselling, school climate, and school organization. Exemplary programs for at-risk students and for dropout prevention.

ED5050   Practicum   12 ch

In-school experience.

ED5053   Middle Level Education   3 ch [W]

Of interest to both experienced and student teachers, this course will focus on the physical, intellectual, psychological and social characteristics of 10- to 14-year-olds and the implications for effective instruction. Additional topics will include Middle School organization, curriculum integration, and teaming.

ED5054   Changing Roles in the Education Workplace   3 ch [W]

Reflection on professional relationships among teachers, administrators and parents. Recent changes in school law and a study of decision-making processes in education will be considered.

ED5062   Cultural Constructions of Childhood   3 ch [W]

An historical examination of cultural constructions of childhood and family and the implications of these various constructions upon the education of young children.

ED5065   Personal Growth and Helping   3 ch [W]

This course will focus on understanding human development; particularly the development of the self and how such development may be nurtured or thwarted within the educational setting. Students will examine issues such as identity, personality, self-awareness, relationships and the application of basic counselling skills to all of these. These issues will be regarded on two levels: as aspects of the individual self and as aspects of the learning environment.

ED5070   Cultural Contexts of Education   6 ch [W]

This course examines history, philosophy, social contexts, and law as they relate to education. Through each of these disciplines we explore the broad concerns and impacts of policy, ethics, and equity, with connections to curriculum and pedagogy. The format will be a combination of lectures and seminars.

ED5071   Education in International Contexts   3 ch [W]

This course examines the nature of education in a range of international contexts with a particular focus on understanding how culture and world view shape education and comparing and contrasting trends and issues for teachers and the teaching in those contexts. It is designed to provide teacher education students with a global perspective on the education profession.

ED5072   Teaching Gifted Students   3 ch (3C) [W]

An examination of school wide enrichment models, curriculum differentiation, and the social and emotional needs of gifted learners. **NOTE**: In addition to work on campus, students will be required to complete a Fall practicum requirement either in their public-school setting or independently. (Course offered in Summer Session only.) *Prerequisite:* Permission of the instructor is required before registering.

SECTION H: FREDERICTON COURSES

ED5075 **History of Education** **3 ch [W]**

Explores current problems with education as well as aims, curriculum, teaching, administration and ideas viewed from an historical perspective.

ED5076 **Religion and Spirituality in Education** **3 ch [W]**

This course will examine the controversial issue of religion and spirituality in education. It will examine how faith and visions of life impact education, values and the philosophy of education, religion and the history of education, visions of life in the curriculum, faith expressions in the classroom, and teaching about religion and spirituality.

ED5078 **Communication Disorders in the Classroom** **3 ch [W]**

This course will provide an introduction to speech and language development in preschool children. It will also provide an overview of academic and classroom difficulties that may result from impairments in speech and/or language.

ED5086 **Special Education Field Experience** **3 ch**

Provides a school-based experience working with students with special needs under the direction of faculty and resource teachers. Enrolment is limited. *Prerequisite:* ED 3031. Permission of the instructor is required before registering.

ED5091 **Learning Disabilities: Introduction** **3 ch [W]**

Concepts, definitions and terminology. A preventive approach.

ED5096 **Behavioural/Emotional Disorders** **3 ch [W]**

An overview of various emotional and behavioural disorders of children and young people and the ways in which coping and management strategies can be applied to develop self-discipline and control.

ED5097 **Differentiating Instruction in the Classroom** **3 ch [W]**

This course will allow teachers to explore current research on differentiation; familiarize themselves with many strategies for differentiating content, process and product; develop differentiation lesson plans including pre-assessment strategies as well as classroom management strategies intended for classroom application.

ED5102 **Curriculum and Evaluation in the Early Years** **3 ch [W]**

Examines characteristics of early years learners and the role of the teacher as observer and curriculum developer in theory and practice.

ED5103 **Project Approach in the Early Years** **3 ch [W]**

This course offers teachers with a multi-disciplinary approach to building on children's natural curiosities, enabling them to interact, question, connect, problem solve, communicate and represent learning. It focuses on the teacher's role in implementing a project-based approach in the early years.

ED5104 **Observation and Pedagogical Documentation** **3 ch [W]**

This course considers current practices in observing and documenting children's learning in the early childhood environments in collaboration with learners, colleagues and families.

ED5105 **Connecting Home and Schooled Literacies** **3 ch [W]**

This course will examine the theory and practice of connecting home and school for the development of a literate community.

ED5106 **Digital Literacies in the Early Years** **3 ch [W]**

This course provides an introduction to understanding the importance of and the application of career development throughout the public education system. Topics include the historical development of career guidance, theories of vocational development, career education in the public system, career assessments, Social Emotional Learning, Global Competencies, Problem Based Learning, Experiential Learning, Labour Market Information, Universal Design for Learning, and working with students from various minority groups.

ED5141 **Orientation to Counselling** **3 ch [W]**

This course provides an introduction to the role of the counsellor in various settings, including the public education system. Students will examine the counsellor as a person, roles of the client and counsellor, the counselling process, counselling skills, counselling theories, and counselling in the individual and group context.

ED5142 **Career Guidance** **3 ch [W]**

This course provides an introduction to understanding the importance of the application of career development throughout the public education system. Topics include the historical development of career guidance, theories of vocational development, career education in the public system, career assessments, Social Emotional Learning, Global Competencies, Problem Based Learning, Experiential Learning, Labour Market

Information, Universal Design for Learning, and working with students from various minority groups.

ED5143 **Group Theory and Skills** **3 ch [W]**

Explores the theory and experiences necessary to understand group dynamics and effective group skills with applications to the public education system. Topics include: group dynamics, leadership, team building, decision-making, communication, effective use of controversy and creativity in group decision making.

ED5154 **Creativity, Images and Meaning** **3 ch [W]**
   (Cross-Listed: FNAT 3703)

Addresses the significance of creativity in image making, communication, and self-expression. Imagery as a primary form of communication provides a basis for exploring a wide variety of topics, ideas and issues. Analyzing images, exploring different visual media and communicating through visual means are key components of this course. Connections that exist between images and other forms of communication and self-expression are also explored.

ED5156 **Special Topics in Adult Education (O)** **3 ch [W]**

Designed to explore areas of special interest or concern in adult education.

ED5157 **Adult Education and Community Development** **3 ch [W]**

This course will explore the theory and practice of community involvement. The course will look at individual, group and organizational contributions to community development. We will consider, local, national and international examples, to help us better understand the various aspects of community development (Offered every other year).

ED5161 **Curriculum Theory** **3 ch [W]**

Theory, current trends, and the role of the teacher in curriculum development.

ED5162 **Integrated Curriculum for the First Nations Learner** **3 ch [W]**

Culture-based education: design, development, and implementation. Appropriate evaluation and assessment.

ED5164 **Learning with Technology in Adult Education** **3 ch [W]**

Utilization of a range of instructional technologies, application of educational technologies for teaching and learning. **NOTE**: This course is not recommended for Computer Science students.

ED5166 **Cultural Studies and Critical Pedagogy** **3 ch [W]**

The study of the entire range of a society's arts, beliefs, institutions, and communicative practices and its application to education.

ED5167 **Interpreting Play for Curriculum Development** **3 ch [W]**

An exploration of the literature on play including play as reflective pedagogy. A variety of theoretical perspectives will be brought to the interpretation of children's play. The teacher's role in creating physical and social environments that facilitate cognitive, emotional, social, spiritual and physical growth will be examined.

ED5171 **Assessing Adult Learning** **3 ch [W]**

Identification of the principles and techniques underlying a variety of assessment methods for learning and teaching. Students will be expected to construct instruments and apply alternative assessment strategies.

ED5173 **Educational Statistics** **3 ch [W]**

Statistics; descriptive and inferential. Includes central tendency, variability, normal curve, correlation and regression, probability, hypothesis testing, chi square, "t" test.

ED5174 **Introduction to Standardized Testing Instruments** **3 ch [W]**

An examination of selected standardized tests used in the public school system.

ED5175 **Classroom Assessment** **3 ch [W]**

An examination of current assessment issues, procedures, and techniques and how these can be used to improve teaching and student learning.

ED5181 **Feminist Theory and Education** **3 ch [W]**

Explores how feminist theories have re-thought educational practice, with specific focus on issues of knowledge, curriculum, classroom pedagogy, research, and educational policy.

ED5182   Problem Solving with Young Children   3 ch [W]
(Subject, Learner Levels)

Examines research and theory of problem solving with young children. Emphasizes teacher's role as facilitator of problem solving across the curriculum.

ED5184   Parental Involvement in Schooling   3 ch [W]

A critical examination of the theory and practice of parental involvement in schooling. A variety of current practices will be examined to explore how professional and parental knowledge/expertise are distinguished and how power relations are constructed.

ED5191   Independent Studies   3 ch [W]

Students will normally be limited to 6 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

ED5209   Creativity and Visual Arts in Teaching and Learning   3 ch [W]

Addresses the importance of creativity and innovation in education, explores applications in teaching, and builds creative capacity through visual and other modes of communication. It is a dynamic, interactive and cross-disciplinary course designed to increase creative, critical and divergent thinking, and art making skills in order to enhance meaning making, problem solving and self-expression.
Students will also learn to design creative and innovative teaching strategies relevant and applicable to teaching visual art and related subject areas.

ED5211   Integrated Learning Through Art   3 ch [W]

Art education theories and practices as they apply to learning across the curriculum.

ED5213   Issues in Art Education   3 ch [W]

An examination of local, national, and international issues currently being debated in art education.

ED5241   Philosophy of Music Education   3 ch [W]

A course rooting methodology in significant, current philosophical trends tailored to students planning to teach music at any level.

ED5242   Music for the Classroom Teacher   3 ch [W]

Examines appropriate methodology, skills and content for the elementary classroom teacher to use in teaching music in a variety of settings. Students will sing, play an instrument, listen and move to music.

ED5243   Music in the Elementary School   3 ch [W]

Study of methods and materials current in the elementary school. Development of skills and curriculum. Study of the young learner and music. *Prerequisite:* 9 ch in music courses or permission of the instructor.

ED5272   Changing to Teaching Practice   3 ch [W]

Examination of teaching practices in light of current pedagogical theory. Specific attention to varying learning styles and modalities, developmental issues and student centered learning.

ED5273   Interdisciplinary Instruction   3 ch [W]

Explores the theory and practice of interdisciplinary teaching with specific reference to each of the elementary, middle level, and secondary levels of schools.

ED5313   Cultural Studies through Theatre   3 ch [W]
(Elementary, Middle, Secondary)

Theatre practices rooted in critical theory and cultural production will engage participants in an exploration of inclusive practices.

ED5314   Drama across the Curriculum (Middle, Secondary)   3 ch [W]

Group process drama will be employed to study in any curriculum subject, such as history, mathematics, science and social studies. No experience necessary.

ED5315   Dramatization of Literature (Elementary, Middle)   3 ch [W]

The interpretation and understanding of literature will be studied through various theatre practices, including readers' theatre, chamber theatre, monologues, dramatic scripts, and other media such as film.

ED5352   Teaching Writing   3 ch [W]

This course introduces discourses about and approaches to teaching and evaluating writing in schools, including traditional approaches, writing process, and genre modelling.

ED5353   Teaching Secondary English I   3 ch [W]

Aims, materials, methods of teaching language, literature, and composition. Middle school and high school.

ED5354   Teaching Secondary English II   3 ch [W]

A sequel to ED 5353. Emphasis on planning course units, evaluation in English, and the integration of English and other subjects. *Prerequisites:* ED 5353.

ED5355   Literacy Learning in Early Years   3 ch [W]

An exploration of diverse research in literacy learning, teaching and assessment practices and the development of literacy skills in the early years.

ED5356   Literacy Learning in the Middle School   3 ch [W]

Current theories of the nature of literacy learning and their relationship to instructional practices in the middle years.

ED5357   Poetry K-12   3 ch [W]

Poetry is probably the most reluctantly taught subject in the school system. Yet it offers one of the most potent links with our cultural and linguistic heritage. This course provides access to texts and to a range of discussion strategies that can be used throughout the school system.

ED5358   Critical/ Cultural Literacy (Middle, Secondary)   3 ch [W]

An examination of literature from different cultural groups using the theories and pedagogical practices of critical literacy.

ED5359   Cultivating Proficient Readers   3 ch [W]

This course provides opportunities to learn a range of reading, learning and assessment strategies that address readers' strengths, needs and passions across content areas.

ED5361   Challenging the Authority of Texts   3 ch [W]

English studies are predicated on textual "authority"; something "authored" and "true." Students will be introduced to contemporary discourses which teach otherwise. Practical approaches offer alternative strategies to formalism structures bogging down English studies in schools.

ED5362   Symbolic Representation in Children's Play,   3 ch (3C) [W]
Pictures and Print

Examines theory in practice of young children and symbolic representation as the context of their emerging literacies.

ED5422   Teaching High School Mathematics   3 ch [W]

Focus on appropriate methodology for teaching mathematics at the high school level.

ED5423   Teaching Middle School Mathematics   3 ch [W]

Focus on appropriate methodology for teaching mathematics at the middle school level.

ED5424   Teaching Mathematics in the Elementary School   3 ch [W]

Focus on appropriate methodology for teaching mathematics at the elementary school level. Students must demonstrate an adequate mastery of the mathematics content underlying the curriculum prior to completion of this course.

ED5425   Indigenous Mathematics   3 ch [W]

This course will explore how mathematics is viewed and used in indigenous cultures and communities. Numerical and geometric concepts (ex. Counting numbers, order, measurement, physical design and pattern) will be addressed with particular consideration being given to Wabanaki langues and world views.

ED5427   Trends in Mathematics Education   3 ch [W]

Current issues in teaching mathematics, Grades K-12. *Prerequisites:* At least one previous course in mathematics education or permission of the instructor.

ED5428   Mathematics Across the Curriculum   3 ch (3C) [W]

Explores ways in which mathematics fits into an integrated curriculum, grades K-12.

ED5429   The Role of Language in the Teaching of Mathematics   3 ch [W]

Examines how the language of mathematics affects its acquisition and how appropriate use of writing and literature can enhance the learning of mathematics.

ED5451   Special Topics in Health Education   3 ch [W]

Explores specific areas of current interest and concern in health education, as defined by students, faculty, and classroom teachers.

ED5478 Health and Physical Education in the Elementary School 3 ch [W]

Examines curriculum and pedagogy in elementary health and physical education programs.

ED5488   Teaching Games in Secondary Physical Education   3 ch [W]

Introduces students to a variety of ways to effectively present and teach games to students at the middle and high school levels. *Prerequisite*: Student must have completed an undergraduate degree in physical education, kinesiology, or related field or by approval of instructor. *Co-requisite*: This course must be taken in conjunction with ED 5492.

**ED5492   Introduction to the Teaching of Secondary   3 ch [W]
                         Physical Education**

Focuses on planning and preparing the learning environment for instruction of physical education. *Prerequisite*: Student must have completed an undergraduate degree in physical education, kinesiology, or related field or by approval of instructor. *Co-requisite*: This course must be taken in conjunction with ED 5488.

ED5493   Teaching Secondary Physical Education   3 ch [W]

This course focuses on topics related to the teaching of physical education at the secondary level (grade 6-12). *Prerequisite:* Student must have completed an undergraduate degree in physical education, kinesiology, or related field or by approval of instructor. *Co-requisite:* This course must be taken in conjunction with ED 5492.

ED5494   Teaching Physical Education   3 ch (3C) [W]

A post-internship course for secondary physical education majors. Emphasis on contemporary trends in teaching physical education in public schools. Practical application.

ED5495   Learning Through Outdoor Experiences   3 ch [W]

This course introduces students to the theory and practice of teaching in an outdoor context. Students will be exposed to a variety of outdoor experiences and relevant teaching techniques and skills. It will culminate in an overnight camping trip.

ED5505   Teaching Science in Elementary School   3 ch [W]

The course will focus on the mindset and methods for teaching science at the elementary school level. Students will become familiar with using their content knowledge, pedagogical skills and their specific context to adapt and teach the elementary science curricula. This course will help students prepare effective science learning environments that embody an inquiry and constructivist approach to teaching.

ED5506   The Nature of Science   3 ch [W]

This course will answer questions about what science is, how it is conducted and what purpose it serves. The majority of this course will involve 'doing' science through hands-on inquiry-based exploration viewing expressions through various perspectives and engaging in discussion about scientific thought processes.

ED5507   Indigenous Perspectives in Science   3 ch [W]

This course will examine the concept of science from Indigienous perspectives as well as identify Indigenous contributions to science historically and today. Concepts such as "Two-eyed seeing" and "cultural border crossings in science" will be explored and practiced. Mi'kmaq and Wolastoqey languages will be used to demonstrate Indigenous ways of knowing the natural world.

ED5511   Introduction to Science Education   3 ch [W]

This course provides an introduction to the teaching of science that focuses on preparing to teach science while challenging students expectations and assumptions regarding science. The Nature of Science, lesson planning, curricular adaptation, assessment, inquiry-based learning, technology integration, and the barriers to learning science are some of the topics covered within the course.

ED5512   Science Education and the Learner   3 ch [W]

This course will explore the ways that science in taught in relation to how students learn. Topics such as experiential learning, inquiry-based learning, constructivism, and the barriers to learning science are some of the topics covered within this course.

ED5513   Advanced Studies in Science Education   3 ch [W]

This course is focused on the integration of Secondary science teaching components into comprehensive and holistic science teaching. Topics include but are not limited to unit planning, assessment, differentiation and technological integration within the science classroom.

ED5514   Special Topics in Science Education   3 ch [W]

This course will require students to comprehensively engage with an area of interest or concern in science education and through a peer-support

and review process engage with other students and the instructor on these topics.

ED5521   Science Education Seminar and Project   3 ch [W]

Students who select either of the certificate programs will participate in advanced discussions concerning science education and develop projects that reflect some area of science education they would like to explore further and which demonstrate their understanding of science education.

ED5561   Évaluation et Apprentissage   3 ch [W]

Ce cours suivra les principes et les pratiques de l'évaluation sommative (évaluation de l'apprentissage) et formative (au service de l'apprentissage et de l'évaluation en tant qu'apprentissage). Les participants auront l'occasion de voir comment ces pratiques sont utilisées de façon efficace et d'apprendre comment les employer dans leur salle de classe.

ED5562   La littératie à l'élémentaire I   3 ch [W]

Dans ce cours, vous aurez l'occasion de vous familiariser avec les principes et les practiques de la littératie en français langue seconde a l'élémentaire. Vous explorez l'approche de la littératie équilibrée, les pratiques exemplaires et les stratégies qui favorisent l'enseignement du français et l'enseignement des matières en français. * A required course for elementary French second language specialists. *Prerequisite*: A French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED5563   La littératie à l'élémentaire II   3 ch [W]

Dans ce cours, vous aurez l'occasion d'approfondir vos connaissances de la pédagogie de la littératie en français langue seconde a l'élémentaire. Vous aurez l'occasion de developer et d'essayer des practiques et des stratégies qui favorisent l'enseignement et l'évaluation du français dans divers programmes et l'integration de la littératie dans l'enseignement des matières en immersion. *A required course for elementary French second language specialists. *Prerequisite*: ED 5562 and a French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED5564   Introduction to Second Language Education   3 ch [W]

Examines the principles of learning and teaching a second language (SL). Emphasize the development of communicative SL activities and the creation of learner-centered lesson plans. *Required course for CTESL candidates. Students may receive credit for ED 5564 or ED 5568 but not both.

ED5565   Advanced Studies in ESL Education   3 ch [W]

Examines communicative language teaching in the content of ESL classrooms. Emphasizes varied teaching methods, curriculum development and evaluation of second language learning. *Prerequisite*: ED 5564 or ED 5568 or equivalent.

ED5566   Field Experience in TESL   3 ch [W]

A practicum in the area of teaching English as a second language (TESL). This course is a requirement for students enrolled in the Certificate in TESL.

ED5567   Specialized Techniques in ESL Teaching   3 ch [W]

The custom-designed course will provide participants with a wide range of field-tested in ESL techniques. The process will be active and interactive. Interaction will vary between small and large-group sessions.

ED5568   Français langue seconde I – Secondaire 3 ch (2C 3L) [W]

Examen des principes de base de la didactique du français langue seconde (FLS) au secondaire ainsi que l'exploration des pratiques de l'enseignement du FLS au secondaire. *Required course for secondary French second language specialists. *Prerequisite*: A French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED5569   Français langue seconde II – Secondaire   3 ch (2C 3L) [W]

Examen en profondeur de l'enseignement du français langue seconde dans divers programmes du niveau secondaire. * Required course for secondary French second language specialists. *Prerequisites*: ED 5568 and a French oral proficiency certificate with a minimum level of Advanced from the New Brunswick Department of Post-Secondary Education, Training and Labour.

ED5575   Reflection on Second Language Theory and Practice   3 ch [W]

This course will introduce methods for teaching Mi'kmaq and Wolastoqey languages in elementary school.

ED5586   Mi'kmaq and Wolastoqey Language   3 ch [W]

and Teaching Methods

This course will introduce methods for teaching Wolastoqey and Mi'kmaq languages in elementary school.

ED5620   Introduction to Teaching Secondary Social Studies   6 ch [W]

Students will develop initial competence in selected aspects of social studies teaching.

ED5621   Introduction to Social Studies in Elementary Education   3 ch [W]

Students will explore the nature of social studies as a school subject and develop initial competence in select aspects of teaching elementary social studies.

ED5622   Global Education   3 ch [W]

An examination of the global education movement and its implications for curriculum and instruction. Students will be involved in a cross-cultural experience, the examination of global education materials, and a curriculum development project. *Prerequisite:* 3 ch in teaching methods.

ED5623   Teaching Canadian Studies   3 ch (3C) [W]

An examination of the ways in which school curricula in social studies and language arts have dealt with the question of Canadian identity and the exploration of alternative ways to treat that topic. Various conceptions of Canadian identity and settler colonialism will be examined along with the historic, geographical and cultural forces that have given rise to them.

ED5625   Introduction to Teaching Secondary Social Studies   3 ch [W]

Students will develop initial competence in selected aspects of social studies teaching with particular emphasis on citizenship education and geography. *Prerequisite*: A minimum of 18 credit hours in subjects related to social studies (e.g., history, geography, political science, classics and economics).

ED5626   Introduction to Teaching Secondary History   3 ch [W]

Students will develop initial competence in teaching history with particular attention to professional scholarship in fostering historical thinking. *Prerequisites:* A minimum of 18 credit hours in subjects related to social studies (e.g., history, geography, political science, classics and economics).

ED5627   Contact and Post-Contact Around The World   3 ch [W]

Since the 15th century a key aspect of world history has been the relationships between Indigenous peoples and European colonizers/settlers. This course will draw on scholarship on the teaching and learning of history to explore how to teach about how these relationships have developed over time and are understood today in a range of geographical contexts including Wabanaki traditional territory.

ED5645   Treaties and Canadian Geography   3 ch [W]

Issues related to the nature and use of land are central to both the subject of geography and understanding the place of treaties in the relationship between Indigenous and non-Indigenous peoples in Canada. This course will explore how geographically focused treaty education can help students meet critical outcomes related to geographic literacy.

ED5683   First Nations Education Seminar   3 ch [W]

Historical trends and contemporary issues in classroom practice and curriculum development.

**ED5684   The Anthropology of Knowledge   3 ch [W]
(Cross-Listed: ANTH 5684)**

Education is quintessentially a cultural matter. No matter what the context - be it in the formal education systems found around the world, or the many informal ways of passing on skills, knowledge, position, prestige and power - education is about culture. A systematic comparison of learning institutions and practices in a range of different cultural settings reveals a lot about our own understandings of teaching, learning and the management of knowledge as well as those from other cultures. Restricted to upper-level students, or the permission of the instructor.

ED5685   Developing First Nations Languages and Literacies   3 ch [W]

Identifies and examines the development of Mi'kmaq-Wolastoqey literacies' concepts and the relationships with language that define First Nations literacy in primary and elementary children.

ED5691   Instructional Design Process   3 ch [W]

Introduction to instructional systems design (ISD) and alternative new processes, used to develop e-learning and classroom materials. Students will explore ways these processes may be used and will have opportunities to implement them.

ED5698   Multimedia Studies in Education   3 ch [W]

The theoretical and practical applications of multimedia technologies across the curriculum will be explored.

ED5699   Cultural Studies Through Multimedia   3 ch [W]

Critical analysis of the cultural products and practices surrounding multimedia in education will be examined.

**ED5801   International Baccalaureate Educator Certificate   6 ch [W]
Introductory Professional Seminar**

This course provides an introductory and broad overview of the International Baacalaurate (IB) from the Primary Years Program through the Middle Years Program to the Diploma Program (DP). Particular philosophical and applied aspects of the IB will be examined in comparison to other approaches to education.

**ED5802   International Baccalaureate Educator Certificate   6 ch [W]
Advanced Professional Seminar**

This course provides a detailed focus on elements of the International Baccalaureate (IB) at all levels from the Primary Years Program through the Middle Years Program to the Diploma Program (DP). Areas covered include curriculum, teaching approaches, classroom structures, short term planning, long term planning, assessment, and professional collaboration.

ED5880   Exceptional Learners   6 ch [W]

This course is designed to enhance teachers' knowledge of the diverse needs of First Nations students as well as knowing how to apply evidence based practices to meet their needs in the classroom. This course is open to students in the 4-year First Nations Teacher Education Program.

ED5910   Practicum   6 ch

A practical field based professional growth experience in which learners will apply theory and monitor their praxis through mentoring and peer consultation. A portfolio will be produced that outlines best practice and professional growth. (Only offered in Trinidad & Tobago)

ED5973   Special Topics in Technology Education   3 ch

Research of current and emerging trends and development in technology, Technology Education and educational/instructional technology.

ED5976   Instructional Technology Across the Curriculum   3 ch [W]

A critical examination of the role of instructional technology across the curriculum. Technologies and strategies for integration to enhance classroom instruction will be developed and evaluated.

ED5977   Program Development in Technology Education   3 ch [W]

Principles and practices for determining knowledge, skills, and attitudes for teaching/learning.

Bachelor of Education in Montreal

ED5026   Educational Psychology   3 ch

This course is designed to survey selected principles, issues and research in educational psychology. A number of learner, teacher, and contextual variables will be addressed.

ED5100   Practicum   21 ch

Fifteen weeks of school and classroom experience. *Prerequisite*: Only students admitted to the BEd (4 year) program in Montreal may register.

ED5170   Assessment in Education   6 ch

This course will deal with the what, why and how of classroom-based assessment. It will examine exemplary practices related to formative assessment (assessment for and as learning), as well as summative assessment (assessment of learning). The course will also examine the nature and purpose of large-scale assessment within education. Topics will include defining clear learning/assessment targets and standards-based assessment, designing assessment techniques, matching assessment with learning and communicating assessment results.

ED5300   Literacy   12 ch

Addresses the theoretical underpinnings and implementation methods of the six strands in the teaching of literacy: reading, writing, listening, speaking, viewing and visual representation.

ED5900   Field Studies Practicum for 4 Year BEd   12 ch

Eighteen weeks of school and classroom experience. *Prerequisite*: only students admitted to the BEd (4 year) program in Montreal may register.

ED5902   Action Research for Teachers   3 ch

Introduces students to the field of educational research with particular attention given to action research and the role of the classroom teacher in the process.

ED5910   **Practicum**   **6 ch**

A practical field based professional growth experience in which learners will apply theory and monitor their praxis through mentoring and peer consultation. A portfolio will be produced that outlines best practice and professional growth.

ED5920   **Aesthetics**   **9 ch**

Examines music, visual art, and physical education both separately and based on curricular integration. Technical skills in each area are presented along with effective ways to implement these subjects in schools. Teaching resources and issues related to arts and education in different cultures are also examined.

ED5930   **Teaching and Learning Citizenship & Social Studies**   **12 ch**

This course has been designed for practicing teaching professionals who have responsibilities directly related to citizenship and social studies education. The focus is upon the development of professional knowledge and skills that teachers require in assisting their students to be effective learners in citizenship and social studies education. The course will emphasize an evidence-based approach to teaching and learning with participants being required to demonstrate a close knowledge of the related research and to demonstrate its application in their daily planning and practice.
The course will require students to become closely acquainted with generally accepted best practice in citizenship and social studies education based on an analysis of programs in England, Australia, the United States and Canada. *Prerequisite:* Only students admitted to the BEd (4 year) program in Montreal may register.

ED5940   **Teaching Elementary Mathematics**   **12 ch**

Focuses on the teaching and learning of mathematics at the elementary school level. Demonstration of methods occurs within a framework that develops content knowledge and mathematical connections underlying curricular topics. Projects and discussion draw upon the individual contexts within which teachers work.

ED5950   **Curriculum and Administration**   **12 ch**

Enhances professional practice by providing teachers with a research based framework for evaluating teaching, reflecting on professional experience, and planning in collaboration with colleagues to improve curriculum and professional practice. Tools are presented to help teachers assume leadership positions within schools.

ED5960   **Science in Primary Schools**   **9 ch**

An opportunity for participants to examine some of the more important educational theories directly related to teaching elementary and intermediate school science. The course will provide a series of interactive opportunities testing various methods and techniques of teaching science.

ED5980   **Inclusive Education**   **6 ch**

This course is designed to enhance teachers' knowledge of the diverse needs of students with special needs as well as knowing how to apply evidence-based practices to meet their needs in the classroom.

EDUC1010   **Children's Literature for Primary School Teachers**   **6 ch**

This course draws on a rich variety of children's literature including picture books, poetry, plays, short story and non-fiction. Throughout the course students will investigate the ways literature can act as a catalyst for writing and representing in the early years.

EDUC1015   **Basic English**   **3 ch**

Attends to aspects of writing as a process. Students will be provided with modelled guided support of strategies to develop as strong writers.

EDUC1016   **Children's Literature**   **3 ch**

A survey course which will provide the reading and appreciation of a rich variety of modern short stories, essays, plays and novels. The major genre studies will be fiction, although drama, poetry and nonfictional prose will be included. The chosen literature will help students understand aspects of their own experience as well as established the basis for teaching of prose and poetry. In addition, the genre of Children's Literature (children's picture books and popular fiction for students at the Primary Level) will be surveyed from the perspectives of concepts, content, languages and illustrations.

EDUC1025   **History, Philosophy and Sociology of Education**   **3 ch**

The aim of the course is to introduce students to a comparative/cross-cultural approach to understanding education and to encourage them to rethink the development of educational ideas, systems and practices by drawing attention to different cultural and historical contexts. In helping students question and challenge dominant ideas about education and its

purposes, the module will use auto/biography, literary contexts and globalized movements in education. Topics will include: purposes and processes of a comparative approach to understanding education; the development of educational ideas; their values and practices; culture and education; globalization and education; and education and the post-colonial experience.

EDUC1030   **Mathematics for Primary School Teachers**   **6 ch**

The course will attend to aspects of content knowledge through emphasis on connections between mathematical ideas and a sense of mathematical process. Core content areas will include, numbers, systems and properties; operations (including alternate methods of computation); basic number theory (e.g., divisibility tests); a survey of geometry (tessellations, shapes, properties, constructions); probability and statistics; measurement; and algebra.

EDUC1035   **Mathematics for Primary School Teachers**   **3 ch**

Attends to aspects of content knowledge through emphases on connections between mathematical ideas and a sense of mathematical process.

EDUC1050 **Science Concepts and Processes for Primary Teachers** **6 ch**

This course will delve into the core science strands that underpin the science curricula (organisms; ecosystems; matter and materials; structure and mechanism; energy and earth and space) and then integrate them across the standard levels and with each other. Particular emphasis will be placed on the processes of science; gathering objective evidence, analysis, developing inferences, drawing conclusions and making predictions.

EDUC1055   **Agricultural Science**   **3 ch**

Provides students with the necessary background to understand the significant role of agriculture and agricultural science.

EDUC1065   **Geography**   **3 ch**

This course of study seeks to expose students to key themes in physical and human geography, thus helping un the understanding and application of spatial models and concepts to the study of geography. Those who are desirous of becoming teachers ought to have strong sense of geographic phenomena that have shaped and are shaping human existence. Geography is not a discrete discipline in the primary curriculum and ideally this course will address geography within the context of social studies education.

EDUC1075   **Art Education**   **3 ch**

Students will explore how Art Education can serve to inspire, motivate and promote the creative imagination among students. Teaching and learning strategies will include developing; sensitivity to the elements of Art and Craft; imaginative and conceptual abilities, manipulative skills; and verbal response skills.

ELECTRICAL AND COMPUTER ENGINEERING COURSES

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.
The *Denotes labs which are held on alternate weeks.
A minimum grade of C is required for all *Prerequisites* and all core and technical elective courses used for credit towards to BScE. Degree.
NOTE: Not all technical electives are offered every year. Please check with the ECE Department and/or the online timetable.

ECE1813   **Electricity and Magnetism**   **4 ch (3C 1T 2L)**

An introduction to the fundamentals of electricity and magnetism and applications. Covers concepts of charge, electric fields, voltage, current, power, energy, magnetic fields and the link between electricity and magnetism for the creation of machines. Includes resistors, resistance, Ohm's law, Kirchoff's voltage and current laws, some electrical properties of materials. Electric sources, simple series, parallel, and series-parallel DC circuits and mesh analysis are examined. Energy conversion and simple electric machines are examined. The behaviour and use of common sensors and transducers are discussed. *Prerequisite:* Two years of high school physics. *Co-requisite:* MATH 1003.

ECE2021   **Electrical Design, Experimentation, and**   **2 ch (1C 2L)**
                    Measurements

A practically oriented course focusing on the application of basic electrical design principles including analog and digital circuit design, prototyping, measurement, testing, troubleshooting, documentation, and version control. *Prerequisite:* ECE 1813.

ECE2214   **Digital Logic Design**   **3 ch (3C 1T)**

An introductory course to practical aspects of digital system design. The course covers digital logic design, including basic design concepts and implementation technology, number representation, synthesis of combinational and sequential logic, and the use of HDL and computer-

based tools. *Prerequisite:* CS 1003 or CS 1073 or equivalent. *Recommended:* ECE 1813. *Co-requisite:* ECE 2215.

ECE2215   **Digital Logic Design Laboratory**   **1 ch (2L)**

This is an introductory course to practical aspects of digital system design. Course includes the design of digital circuits with CAD tools and VHDL hardware description language. *Prerequisite:* CS 1003 or CS 1073 or equivalent. Recommended ECE 1813. *Co-requisite:* ECE 2214.

ECE2412   **Simulation and Engineering Analysis**   **4 ch (3C 1.5L)**

An introduction to modeling and numerical methods as applied in the solution of engineering problems. The solution of nonlinear equations, polynomials, curve fitting, numerical integration and difference equations. Simulation tools such as MATLAB will be used. *Prerequisites:* CS 1003 or CS 1073 or equivalent; ECE 1813 or equivalent; MATH 1013; MATH 1503 or equivalent.

ECE2683   **Electric Circuits and Machines**   **4 ch (3C 1T 3*L)**
                     (for non-electricals)

Network analysis including AC. Introduction to transformers, DC machines and AC machines. Cannot be used for credit by students in the Electrical Engineering and Computer Engineering programs. *Prerequisites: ECE 2701 or ECE 2711,* MATH 1013, MATH 1503.

ECE2701   **Electric Circuits and Electronics**   **4 ch (3C 1T 3*L)**
                     (for non-electricals)

Network analysis including AC. Introduction to electronic devices, circuits, and motors. Cannot be used for credit by students in the Electrical Engineering and Computer Engineering programs. *Prerequisites:* ECE 1813 or equivalent, MATH 1013, MATH 1503.

ECE2711   **Electric Circuits**   **4 ch (3C 1T 3*L)**

Basic DC circuits: Network analysis and theorems. AC circuits: introduction of phasors, Network analysis and theorems applied to AC circuits. *Prerequisites:* MATH 1013, ECE1813 or equivalent.

ECE2722   **Circuits and Systems**   **4 ch (3C 1T 3*L)**

Network analysis. Transient and steady state responses. Transfer functions, complex frequencies, poles and zeros, Laplace Transforms. Frequency Response and Bode Plots. Filters (passive and active). *Prerequisites:* ECE 2711 and MATH 1503 or equivalent. *Co-requisite:* MATH 3503 or equivalent.

ECE3031   **Electrical and Computer Engineering Design 4 ch (3C 1T 1.5L)**

The emphasis is on application of design methodologies to electrical and computer engineering design problems in some major areas of Electrical Engineering. Topics include: design specifications and requirements, simulation and construction, laboratory measurement techniques, design verification, the implementation cycle, environmental impact, project management, economic evaluation, safety assessment and standards. One or more design projects form an integral part of the course. *Prerequisites:* ECE 2021, ECE 2722, ECE 2214 and ECE 2215, ECE 2412, ECE 3111, ENGG 1003, ENGG 1015.

ECE3111   **Electronics I**   **4 ch (3C 1T 3*L)**

An introduction to analog electronics using a device-based approach. The course starts with basic nomenclature and the ideal amplifier model concept. Semiconductor diodes, BJTs and MOSFETs are then introduced followed by how these devices can be used to implement single-stage small-signal amplifiers. To compliment this overall analog approach, the use of both BJTs and MOSFETs in digital logic gates is also covered which in turn introduces the concept of noise margins. *Prerequisite:* ECE 2711 or ECE 2701.

ECE3122   **Electronics II**   **4 ch (3C 1T 3*L)**

This course follows a similar approach to Electronics I (ECE 3111), however in this more advanced course, the ideal devices introduced earlier are replaced with real devices. The overall theme of this course is frequency response and feedback techniques as applied to small-signal amplifiers. In addition, circuit modeling using a computer is introduced and used as a design aid. *Prerequisites:* ECE 2722, ECE 3111.

ECE3221   **Computer Organization**   **4 ch (3C 1T 3*L)**

Register transfer systems and datapaths, microprocessors, microprocessor architecture and operation, instruction formats, assembly language programming, procedures and parameter passing, system bus timing, interfacing memory IO ports, serial and parallel data transfer, interrupts. *Prerequisites:* ECE 2214, ECE 1813. *Co-requisite:* ECE 2215, CS 1023 or CS 1083.

ECE3232   **Embedded Systems Design**   **4 ch (3C 2L)**

A hardware oriented course with emphasis on the components and techniques used in the design of embedded systems. Topics include

system design and methodologies and techniques, microcontroller hardware design, software design using C, testing and implementation. A team project will be used to provide the opportunity to apply the content of this course to the development of an embedded application. Most lecture material will be delivered in the context of this project. *Prerequisites:* CS 1023 or CS 1083; ECE 2701 or ECE 2711; ECE 3221.

ECE3312   **Systems and Control**   **4 ch (3C 1T 3*L)**

Mathematical models of dynamic systems, linear systems, analysis in the time and frequency domain, stability, Routh-Hurwitz and Nyquist stability criteria, feedforward and feedback control, PID controllers, principles of feedback design. *Prerequisites:* ECE 2722, MATH 3503, ENGG 1082.

ECE3511   **Signals**   **4 ch (3C 1T 3*L)**

Discrete-time (DT) and continuous-time (CT) signals. Signal characterization. Basic signal manipulation. Linear time-invariant systems and the convolution integral/sum. Signal approximation via orthogonal signal sets. Fourier Series. The CT Fourier Transform (FT) and properties. Sampling and reconstruction of signals. The DTFT and its properties. The DFT. *Prerequisites:* ECE 2722, MATH 3503.

ECE3612   **Electric Machines and Design in Sustainable 4 ch (3C 1T 1.5L)**
                     Energy Systems

Covers the basic theory of, transformers, DC motors/generators and AC polyphase machines, including synchronous and induction machines. This material is augmented with the application and design of such machines utilized in Sustainable Energy systems. *Prerequisites:* ENGG 1082, MATH 2513, ECE 2711.

ECE3821   **Electromagnetics I**   **4 ch (3C 1T 1.5L)**

Static and time-varying electric and magnetic fields including vector calculus and Maxwell's equations. Propagation introduced through transmission lines and uniform plane waves. *Prerequisites:* MATH 3053, MATH 2513, ECE 2711.

ECE4040   **Electrical and Computer Engineering**   **8 ch (2C 4L) [W]**
                     Design Project

Working in teams, students will complete an electrical engineering design project that draws on their knowledge and skills obtained in previous courses. Student teams will design a structure, system, or process to meet a broad range of specified constraints. The development process should consider a broad range of constraints including health and safety, sustainable development and environmental stewardship. Students will manage their projects professionally, prepare a comprehensive written report, and present their design work orally. *Prerequisites:* CS 1023 or CS 1083, ECE 3031 and 48 additional credit hours of ECE core courses.

ECE4133   **Instrumentation Design**   **4 ch (3C 3*L)**

This course considers the design of a general-purpose data acquisition system. The electronic design engineer of today can no longer be thought of as a digital or analog designer. Consequently, this course melds the analog and digital electronics areas with a unified engineering approach emphasizing the practical aspects involved. Computer aided design tools are used wherever possible. *Prerequisites:* ECE 3122, ECE 3221.

ECE4143   **Electronic Circuit Design (O)**   **4 ch (3C 3*L)**

Considers the philosophy and practice of the design of semiconductor circuits. *Prerequisite:* ECE 3122.

ECE4173   **Devices and Circuits for VLSI**   **4 ch (3C 3*L)**

Introduction to circuit design and layout. Basic digital gates and clocked systems. Basic RF circuits and components and devices for RF. CAD tools for simulation and layout. *Prerequisite:* ECE 2214 and ECE 2215, and ECE 3122.

ECE4242   **Computer Architecture**   **4 ch (3C 3*L)**

Important aspects of computer architecture will be covered with a unifying theme of computer system performance. Topics include computer evolution, system busses, main memory, cache memory, memory management, CPU structure, CPU pipelining, superscalar processors, reduced instruction set computers, 64-bit processors, and parallel processing architectures. *Prerequisites:* ECE 2215, ECE 3221.

ECE4251   **Real Time Systems**   **4 ch (3C 2L)**

Real time system design and implementation: basic concurrency theory including scheduling, mutual exclusion and process management, task synchronization and communication, operating system kernels, real time system hardware, software for real time embedded systems. *Prerequisite:* ECE 3232.

ECE4253   **Digital Communications**   **4 ch (3C 3*L)**

Covers the fundamentals of modern digital communications, coding and information theory, error detection and correction, data compression,

modulation and models for telecommunications and current international standards. *Prerequisites:* ECE 3221, ECE 3511.

ECE4261   **Digital Systems Designs**   **4 ch (3C 3*L)**

Advanced study of the digital system design methodology. Design methods, models and approaches including: RTL Design, SOC design, and testing methodologies, Intellectual Property (IP), reuse, software-hardware co-design, hardware description languages (HDL), structural and behavioral models, design for low power. One or more design projects. *Prerequisite:* ECE 3232.

ECE4273   **VLSI Systems Design**   **4 ch (3C 3*L)**

Methods and tools for the design of FPGA-based digital circuits with focus on large-scale systems, i.e. digital signal and arithmetic processors, microcomputers. VLSI design process, standards, constraints, implementation, technology-dependent optimization, simulation, testing, and verification. Multi-FPGA systems. FGPA-based peripheral devices. One or more design projects. *Prerequisite:* ECE 3232.

ECE4323   **Modern Control Systems and Applications**   **4 ch (3C 3*L)**

Introduces real-world applications of control theory, including system modeling (linear, nonlinear, discrete, continuous and probabilistic models) and problem definition, determining system components and architectures, dealing with limitations and constraints (nonlinearity, disturbances and uncertainties), standard and advanced controls design (linear, nonlinear, and optimal control methods) and tuning methods. Computer-aided controls engineering is emphasized (algorithms/MATLAB). *Prerequisite:* ECE 3312 or CHE 4601 or ME 3623. STAT 2593.

ECE4333   **Robotics**   **4 ch (3C 2L)**

This is a project based course where students design a variety of subsystems that are integrated and tested on a mobile robot. Topics include: actuators, PWM, H-bridges, position and range sensors, velocity sensors, optical sensors and switches, strain gauges, position and velocity control, electro-mechanical subsystems, planning and trajectory generation, computer software and hardware interfacing. *Prerequisite:* ECE 3221 or equivalent, ECE 3312 or equivalent.

ECE4343   **Haptic Robotics**   **4 ch (3C 3*L)**

Haptics is the science and technology of creating the sensation of touch using robotic devices. This course will cover the three interrelated domains of human physiology, mechatronics and control, to develop haptic robots that render a variety of environments. *Prerequisites:* ECE 3312 or ME 3623.

ECE 4403   **Software Design Fundamentals.**   **4 ch (3C 3*L)**

Provides a foundation for designing well-structured software applications using object-oriented programming. Covers data abstraction, encapsulation, inheritance, polymorphism, and the principles of reusable object-oriented design. **NOTE:** This course may not be taken for credit by BCS or BScSwE students. Credit will only be granted for one of CS2013, CS2033, CS2043, or ECE4403. *Prerequisites:* CS 1023 and ECE 2412 or equilvalent.

ECE4433   **Safety Critical Design**   **4 ch (3C 3*L)**

This elective covers the reliability, availability and fault tolerance of computer systems. It introduces topics related to fault-tolerant computing reliability of hardware and software implementation of engineering systems. It includes fail-safe and fail-operate computer systems design, qualitative analysis of safety-critical systems, risk analysis, fault tolerance techniques, reparability, and redundancy. *Prerequisites:* STAT 2593 and ECE 3312.

ECE4523   **Communication Systems**   **4 ch (3C 3*L)**

Introduces analog and digital communication in the presence of noise. Techniques and application of basic information theory. *Prerequisite:* ECE 3511.

ECE4531   **Digital Signal Processing I**   **4 ch (3C 1T 3*L)**

Fundamentals of discrete-time processing. Difference equations and their solutions; the Z transform and its properties. Transfer function, frequency response, impulse response, and realization structures for discrete-time systems, cross-correlation and power spectral density. Discrete time filters: types, effects of pole-zero placement, the Bilinear Transform. Circular convolution and the DFT. *Prerequisites:* ECE 2214 and ECE 2215, ECE 3511.

ECE4542   **Digital Signal Processing II**   **4 ch (3C 3*L)**

Fourier Methods, Fast Fourier Transform, Filter design, Windows, State Variable Methods, Estimation. *Prerequisite:* ECE 4531.

ECE4553   **Introduction to Pattern Recognition**   **4 ch (3C 3*L)**

An introduction to pattern recognition and its applications. Topics include Bayesian decision theory and parameter estimation, feature generation and selection, parametric vs. nonparametric classification techniques, supervised vs. unsupervised, learning and clustering. *Prerequisites:* ECE 3511, STAT 2593.

ECE4623   **Advanced Electrical Machines**   **4 ch (3C 3*L)**

Covers principles of operation, controls and applications of single phase induction motors, permanent magnet machines including permanent magnet synchronous machines and brushless DC motors, servo motors, and other special electrical machines. *Prerequisite:* ECE 3612.

ECE4633   **Power System Analysis**   **4 ch (3C 3*L)**

This course starts with the structure and performance of three-phase synchronous generators for power system applications. The basic structure of power systems (the isolated and interconnected power systems) are presented. The modeling of power system components are introduced in this course, along with the per-unit system and single-line diagrams. The matrix modeling with the admittance and impedance matrices are introduced as a practical method for different power system analysis studies. The power flow formulation and solution methods are provided with the help of software tools. The last part of the course is fault analysis, which models power systems under different fault types. It also provides methods used to perform fault analysis, and selection of grounding designs. *Prerequisites:* ECE 3612, ECE 2722 and MATH 3503.

ECE4643   **Power Electronics**   **4 ch (3C 3*L)**

This course covers the modeling, structure, features, control, and applications of switching elements for high power converters. In this course, thyristors, diodes, MOSFETs, BJTs, IGBTs are analyzed for their behaviours in different switching circuits, control circuits, and snubber circuits. Power electronic converters are also presented, along with their models, operation, switching schemes, characteristics, and sample applications. The covered power electronic converters are the switch-mode AC-DC, AC-AC, DC-DC, and DC-AC for single and three-phase topologies. *Prerequisites:* ECE 2722, ECE 3111, ECE 3612.

ECE 4803   **Data Communications and Networking**   **4 ch (3C 3*L)**

Data transmission fundamentals including signal encoding, error control, flow controls, multiplexing, switching. Protocol architectures (OS, TCP/IP, Ipv6). Network protocols peer to peer, medium access control, routing. Local area networks: Ethernet, wireless. *Prerequisite:* ECE 3221.

ECE4813   **Electromagnetics II**   **4 ch (3C 1T 1.5L)**

Time varying applications of Maxwell's equations including guided and free-space wave propagation as well as the antennas used in transitioning between the two. Public safety is addressed through exploration of Health Canada's Safety Code 6. *Prerequisites:* ECE 2711, ECE 3821, MATH 2513, and MATH 3503.

ECE4823   **Communications and Network Engineering**   **4 ch (3C 3*L)**

Advanced network architectures: RSVP, MLPS, RTP. Modeling and simulation of data networks: queuing models for media access, error control and traffic management protocols, modeling of traffic and inter-arrival time, performance analysis. Communication network design. Network management and security. *Prerequisites:* STAT 2593 or STAT 3083; ECE 3221 or CS 2545.

ECE4833   **Microwave Engineering**   **4 ch (3C 3*L)**

Topics related to modern microwave systems including design and measurement of passive microwave circuits. *Prerequisite:* ECE 4813.

ECE4913   **Independent Project**   **4 ch (8L) [W]**

An independent project. Students work under the supervision of a chosen faculty member. Students are responsible for finding a supervisor and initiating the project. Deliverables include a comprehensive report detailing the work. *Prerequisite:* Successful completion of 110 ch in the engineering program.

ECE4923   **Introduction to Biomedical Engineering**   **4 ch (3C 3*L)**

Introduces biomedical concepts in the context of electrical engineering. Topics covered include basic anatomy and physiology, biopotential origination and modelling, biosignal measurement instrumentation, biosignal analysis and a survey of medical devices and health care technologies. *Prerequisites:* ECE 2412, ECE 2701 or ECE 3111.

ECE4933   **Special Studies in Electrical Engineering**   **1 ch**

With the approval of the Department Chair and under the guidance of a member of the faculty, a student may perform special studies and investigations related to the undergraduate program. Restricted to students in their final year of study.

ECE4943   Topics in Computer Engineering   4 ch (3C 3*L)

A selected area of computer engineering with a unifying theme will be explored in depth. The topics covered are selected from one or more of the following areas: parallel processing, operating systems, concurrent system performance, network based parallel computing, embedded system issues, algorithms in real-time, computer system modeling analysis. *Prerequisite:* ECE 3232.

ENGINEERING

See beginning of Section H for abbreviations, course numbers and coding.

ENGG1001   Engineering Practice Lecture Series   0 ch (1C)

A guest lecture series intended to introduce students to the engineering profession. Speakers from various engineering disciplines and job functions share their career experiences and discuss exciting engineering projects underway in the region.

ENGG1003   Engineering Technical Communications   4 ch (2C, 3L) [W]

Oral, written and visual communication skills are developed as important tools used by engineers. Technical writing style is taught through the preparation of reports and summaries, and oral communication skills are improved through public speaking and the preparation of formal presentations. Computer-aided design is introduced and used to enhance visualization skills. The importance of information literacy is stressed. Various types of engineering drawings are presented and engineering unit conversions are practiced.

ENGG1015   Introduction to Engineering Design and   2 ch (1C, 2L)
                              Problem Solving

This course introduces engineering design methodology and develops basic problem solving techniques. Under the supervision of senior students and with the guidance of industry engineers, students work both individually and in teams on real engineering design projects for the local community in a simulated engineering consulting environment. Project planning, team- building, leadership and responsible care are discussed. Laboratories are used to demonstrate problem solving techniques for analytical and open-ended problems, and life-long learning is emphasized by having students integrate co-requisites and researched material into a structured design process. Restricted to students with fewer than 60 ch of program credit upon first admission to the Faculty of Engineering or with permission of the instructor. *Co-requisites*: ENGG1003, PHYS 1081, MATH 1003, MATH 1503.

ENGG1082   Mechanics for Engineers   4 ch (3C 1T* 3L*)

Introduction to the fundamental concepts of vector analysis, and its application to the analysis of particles and rigid bodies. The static analysis of particles and rigid bodies, including practical applications such as the analysis of trusses, frames and machines. The static analysis of structural systems including the analysis of internal forces and bending moments in beams. The analysis of kinematics of particle motion along straight and curved paths. The analysis of kinetic motion for particles based on force and acceleration, and work and energy. The course topics focus on visualizing concepts in mechanics, and developing problem solving strategies. *Prerequisites:* PHYS 1081, MATH 1003 and MATH 1503 (or MATH 2213 or equivalent).

ENGG4000   Senior Design Project   8 ch (1C 2T 4L) [W]

Full-year design course (fall and winter of same academic year) which may be taken by senior students in any engineering program. Working preferably in multidisciplinary teams of three to five individuals, students design a structure, system, process or new product. Many of the projects are sponsored by outside clients. Proposed solutions involve the use of modern engineering tools and design methods, and must meet a broad range of constraints including health and safety, sustainable development and environmental stewardship. Deliverables include progress reports and presentations, a final report with appropriate engineering drawings, and if applicable, a prototype. Weekly lectures cover topics relevant to the design projects and include presentations by guest speakers. The weekly tutorial hours are designated for scheduled meetings with project co-mentors. *Prerequisites:* Restricted to students who have met the requirements of the capstone design course in their engineering program.

ENGG4013   Law and Ethics for Engineers   3 ch (3C)

General introduction to the legal and ethical aspects of engineering practice. Social responsibilities of engineers, the engineering act and code of ethics, occupational health and safety, sustainable development, environmental stewardship, employment equity, legal duties and liabilities of the professional engineer, contracts, the tort of negligence, labour law, intellectual and industrial property, conflict resolution. Restricted to students with at least 100 ch in the engineering program. Limited enrolment; priority given to students in their final year of engineering.

ENGG4025   Multidisciplinary Design Project   8 ch (2C 2T 4L) [W]

Full-year design course (fall and winter of same academic year) which may be taken in place of the final year design course in any engineering program. Working in multidisciplinary teams of 4 or 5 students, students will work on a design project sponsored by an outside client. The proposed solution should meet a broad range of constraints including health and safety, sustainable development and environmental stewardship. Deliverables include progress reports and presentations, a final report including engineering drawings, and if applicable, a prototype. Weekly lectures will cover topics relevant to the design projects and will include presentations by guest speakers. The weekly tutorial hours are designated for scheduled meetings with project co-mentors. *Prerequisites:* Restricted to students who have met the requirements of the capstone design course in their program and have received approval from their degree program coordinator.

ENGLISH

General Notes on Courses
Courses whose numbers begin with the digits 3 and 4 are normally open only to students in their third and fourth years. Courses whose numbers begin with the digit 5 are normally open only to students in Honours. Each spring the Department compiles a Handbook with detailed descriptions of courses to be offered in the following academic year. For information about instructors, texts, assignments, and examinations required etc., you should consult this Handbook, available from the Department office and online at the English Department website. For further information, consult the instructors.
Other Literatures: Consult the course listings for Classics, French, Greek, and Latin, and for Comparative Cultural Studies.
English as a Second Language: Consult the course listings for AESL (Academic ESL).
Drama program: Consult the course listings for DRAM.
Film program: Consult the course listings for FILM.
NOTE: See beginning of Section H for abbreviations, course numbers, and coding.

ENGL1000   Introduction to Modern Literature in English   6 ch (3C) [W]

This course introduces students to a diverse range of literary works written in English, primarily from the twentieth and twenty-first centuries, including short stories, poems, plays, and novels. These works demonstrate how literature can open up new understandings about societies and histories both within and beyond our local experience. The selection of texts varies from section to section, but all sections devote one-third of class time to developing writing skills, and the course places considerable emphasis on critical reading. ENGL 1000 welcomes all students with an interest in English, and it is normally required for the English Major and Honours programs.

ENGL1103   Fundamentals of Clear Writing   3 ch (3C) [W]

A study of the basic principles of clear prose writing, focusing on essay structure and organization, paragraph structure, sentence structure, grammar, punctuation, and word choice, as well as revising and proofreading. Students will submit numerous written assignments.

ENGL1104   Fundamentals of Effective Writing   3 ch (3C) [W]

A further examination of the basic principles of prose writing, with special attention to larger patterns of organization and development used in prose exposition and argument. *Prerequisite:* A grade of C or better in ENGL 1103, or equivalent.

ENGL1144   Reading and Writing Non-Fiction Prose   3 ch (2C 1T) [W]

By studying non-fiction prose models and by writing essays, students will work to improve their writing, explore techniques to craft effective essays, and develop critical and analytical skills applicable to a wide range of disciplines. Tutorials use exercises and discussions to assist this development.

ENGL1145   An Introduction to Prose Fiction   3 ch (2C 1T) [W]

Two weekly lectures examine a variety of short stories (and perhaps one or two novels) from the nineteenth, twentieth, and twenty-first centuries. Weekly small tutorials teach critical and writing skills (such as grammar, punctuation, organization, and argumentation) applied to the course readings.

ENGL1146   An Introduction to the Novel (O)   3 ch (2C 1T) [W]

Examines a brief range of novels from the nineteenth and twentieth centuries.

ENGL1173   Introduction to Acting and   3 ch (3 hours/wk
                             Performance   plus practical work)
                        (Cross-Listed: DRAM 1173)

An introduction to acting suitable for students at all skill levels, from beginners to experienced performers. Instruction will cover the basics of

voice, movement, improvisation, script analysis, and monologue and scene work, culminating in a final performance project. **NOTE:** Students can obtain credit for only *one* of ENGL 1173 and DRAM 1173.

ENGL2011   **English Literature to 1660**   3 ch (3C) [W]

This course traces the beginnings of English literature to 1660, with a focus on love and sexuality, cultural and linguistic upheavals, religion and secularism, and the impact of imperialism. While society was structured by powerful ideas of order grounded in religion, nature, social rank, gender, ethnicity, and race, traditional thinking about these concepts was increasingly challenged, not least by contact with non-European cultures and the Scientific Revolution. As literacy rates rose, English literature found new audiences, producing richly varied and often playful works. Works by figures such as Chaucer, Shakespeare, and Milton are central to the course, but other texts will also be discussed. Genres include poetry, drama, and prose. This course is required for the English Major and Honours programs, and strongly recommended for Minors. **NOTE:** Students can obtain credit for only *one* of ENGL 2011 and ENGL 2901. *Prerequisite:* a grade of C or better in ENGL 1000 or equivalent, or permission of the instructor.

ENGL2012   **English Literature 1660-1900**   3 ch (3C) [W]

This course picks up the story from ENGL 2011. In these centuries, trade, industrialization, wars, and Britain's rise as an imperial power helped to spark social conflicts centring on class, race, indigeneity, gender, sexuality, politics, and religion. New genres (such as the novel) emerged and others (such as poetry) transformed; the accelerating rise in literacy rates created new audiences for literature and also meant that people from an ever-broader range of social backgrounds were writing. Poetry and prose are the major genres here. This course is required for the English Major and Honours programs, and strongly recommended for Minors. **NOTE:** Students can obtain credit for only *one* of ENGL 2012 and ENGL 2902. *Prerequisite:* A grade of C or better in ENGL 1000 or equivalent, or permission of the instructor.

ENGL2173   **Acting: Body and Text**   3 ch (3 hours/wk
                     (Cross-Listed: DRAM 2173)   plus practical work)

A course suitable for both beginner and experienced actors, with a focus on voice, movement, and script analysis, culminating in the presentation of a scene study or one-act play. Rehearsal and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of ENGL 2173 and DRAM 2173.

ENGL2174   **Technical Production and**   3 ch (3 hours/wk
                     Design for the Theatre   plus practical work)
                     (Cross-Listed: DRAM 2174)

An introduction to set construction, lighting, sound, and stage management for the theatre, with instruction in basic principles of set, sound, and lighting design. As part of their work for the course, students will assist with carpentry and design work for one or more Theatre UNB mainstage productions and act as crew members for productions. Workshop and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of ENGL 2174 and DRAM 2174.

ENGL2175   **Mainstage Production I**   3 ch (3 hours/wk
                     (Cross-Listed: DRAM 2175)   plus practical work)

Participants in this course form a theatre company and produce, rehearse, and perform a mainstage production for the Theatre UNB season, under the direction of the instructor. Rehearsal and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of ENGL 2175 and DRAM 2175. *Prerequisite:* Students must have either completed or be concurrently enrolled in ENGL 1173, DRAM 1173, ENGL 2173, or DRAM 2173.

ENGL2195   **Introduction to Creative Writing:**   3 ch (3C/WS) [W] (LE)
                Poetry and Drama

Introduction to the writing of poetry and drama, with a focus on basic technique, style, and form. Combines writing exercises and lectures on the elements of writing, but also introduces the workshop method, by which students provide critiques of each other's work and develop editorial skills. May include assigned readings.

ENGL2196   **Introduction to Creative Writing:**   3 ch (3C/WS) [W] (LE)
                Fiction and Screenwriting
Introduction to the writing of fiction and to screenwriting, with a focus on basic narrative technique, style, and form. Combines writing exercises and lectures on the elements of writing, but also introduces the workshop method, by which students provide critiques of each other's work and develop editorial skills. May include assigned readings.

ENGL2197   **Travel Writing (O)**   3 ch (3C) [W]

This course introduces students to contemporary travel-writing narratives, both long and short, written by a diversity of notable contributors to the genre. The course examines relevant themes of travel narratives as well as structural techniques that shape the genre. The course also invites students to use this knowledge to write their own travel sketches based on experiences of travelling in Canada or abroad, combined with appropriate contextual research. The course evaluation is based on both critical essays and creative writing assignments.

ENGL2263   **Shakespeare and Film (O)**   3 ch (3C) [W]

Film directors have transformed Shakespeare into one of today's hottest cultural properties, rekindling a profitable relationship with the world's greatest playwright that dates back to the first days of late-nineteenth-century cinema. The screen has now overtaken both the written text and the stage as the medium in which most people discover and appreciate Shakespeare. In this course we shall study some examples of this flourishing exchange between Shakespeare and film in terms of artistic expression and social practice. Required readings will include single-volume editions of the plays; a film studies handbook; and screenings of the films (at least two versions of each play).

ENGL2603   **Literature of Atlantic Canada (O)**   3 ch (3C) [W]

An exploration of poetry, fiction, drama, and/or film, written by Atlantic Canadians, that emphasizes the prevalent themes explored by Maritime and Newfoundland authors, such as the search for personal and regional identity, human relations to landscape and the natural world, and the meaning of "home place." Authors may include Alden Nowlan, Milton Acorn, Rita Joe, David Adams Richards, John Steffler, Mary Dalton, Anne Compton, Wayne Johnston, Lisa Moore, Anne Simpson, George Elliott Clarke, Sue Goyette, Michael Crummey, El Jones, and Nolan Natasha.

ENGL2605   **Introduction to Indigenous Literature of the**   3 ch (3C) [W]
                Wabanaki Confederacy/Atlantic Region

An introduction to historical and contemporary Indigenous literatures and cultures of the five nations (Mi'kmaq, Wolastoqey, Passamaquoddy, Abenaki, and Penobscot) that comprise the Wabanaki Confederacy, straddling the Canada-US border in the Atlantic region. Authors may include Gabriel Acquin (Wolastoqey), Mihku Paul (Wolastoqey), Lorne Simon (Mi'kmaq), Peter Clair (Mi'kmaq), Shirley Bear (Wolastoqey), Molly Spotted Elk (Penobscot), Douglas Walbourne-Gough (Qualipu Mi'kmaq), and Cheryl Savageau (Abenaki).

ENGL2608   **Introduction to Contemporary**   3 ch (3C) [W]
                     Canadian Literature (O)

A survey of English-Canadian fiction, non-fiction prose, poetry, drama, and/or film that explores major themes in contemporary Canadian literature, such as the shaping of Canadian identity, regionalism and the global perspective, class divides, ecocritical views, and other current issues. Authors may include Dionne Brand, Tomson Highway, Lynn Coady, Don McKay, Eden Robinson, Katherena Vermette, and Joshua Whitehead.

ENGL2703   Introduction to Modern American Literature (O) 3 ch (3C) [W]

An exploration of selected topics in American literature and culture. The theme of the course changes each year. In each course, students read selected works of poetry, fiction, creative non-fiction, and/or drama and may also explore the relationship between U.S. literature and other media such as film and television. Possible themes include the American West, multi-ethnic literature, U.S. presidential elections, the Beat Generation, and Hollywood fictions. Please see the Department of English Handbook or website for the current description.

ENGL2903   **Current Issues in Literature (O)**   3 ch (3C) [W]

How does literature engage with the world's urgent problems? How does literature reflect or even challenge reality? This course narrows its focus to key concepts, themes, and issues with which literature across different traditions in English wrestles. The course will address one or two key concepts and themes, such as alienation, climate crises, "progress," race, empire, sexuality, politics, and animals. Texts may be drawn from historical and contemporary periods and may include a range of popular genres such as sci-fi, utopian/dystopian fiction, Gothic fiction, film, video, comics, and graphic novels.

ENGL2909   **International Film History**   3 ch (3C) [W]
                     (Cross-Listed: FILM 2909)

This course introduces students to major stages in the development of film as an international art. Topics include Silent Cinema, German Expressionism, Soviet Montage, Classical Hollywood, Italian Neorealism and Modernism, French New Wave, Japanese New Wave, British New Wave, Australian New Wave, Experimental Cinema, Cinema Novo, New German Cinema, Postcolonial Cinema, Bollywood, the New Hollywood, American Independent Cinema, Dogme 95, and others. **NOTE:** Students can obtain credit for only *one* of ENGL 2909 and FILM 2909.

ENGL2984   **Introduction to Speculative Literature (O)**   3 ch (3C) [W]

An introduction to speculative literature, including science fiction, fantasy, and horror. The course focuses on novels and short fiction but may also touch on drama, film, and television.

ENGL2987   **Introduction to Queer Literatures (O)**   3 ch (3C) [W]

Covering a range of historical and contemporary queer, two-spirit, and transgender authors, this course queers the field of English literature by exploring texts across multiple genres through the lens of queer theory. As part of challenging the heteronormativity of the English literary canon and its reception, we will include canonical authors who are seldom read as part of a broader queer history. Topics may include HIV/AIDS, racialization and gender, transgender, body modification, mental health, drag, the closet, shame, pride, rights, and families.

ENGL3040   **Medieval Literature (O)**   6 ch (3C) [W]

Examines a wide variety of medieval literature from the British Isles, including courtly romances and dream visions, bawdy *fabliaux,* alliterative heroic verse, lyric poetry, verse satire, and drama. Also explores the historical contexts of the individual works: the politics and shifting social structures of this period, the intellectual and cultural environment, and the ways in which the works respond to the international political, religious, and military conflicts of the age and to contact with non-European cultures.

ENGL3083   **Literary Theory and Critical Practice**   3 ch (3C) [W]

A study of the development of literary theory and criticism, with some attention to critical practice. The course covers major approaches to literary interpretation, such as deconstruction, gender studies, Marxism, new historicism, postcolonial studies, and psychoanalysis. Readings will include excerpts from theorists such as Jacques Derrida, Michel Foucault, Julia Kristeva, Judith Butler, and Homi Bhabha. **NOTE:** Students cannot obtain credit for both ENGL 3083 and ENGL 5083.

ENGL3103   **Creative Writing: Studio Course (O)**   3 ch (3WS) [W]

A studio course offers students the opportunity to work on an independent creative writing project supervised by a faculty member of the English Department or by a person approved by the Director of Creative Writing and the Chair of the Department. Students wishing to take a studio course must find a faculty member willing to supervise the project. The project may explore a single genre in depth or may be a multi-genre work. Readings will typically be assigned in addition to the writing done for the course. Students will meet regularly with the supervisor in editorial sessions to discuss the writing in detail and to discuss assigned readings. The course must not include writing done for another course or workshop.

ENGL3123   **Creative Writing: Poetry**   3 ch (3WS) [W]

A creative writing course aimed at developing skills in the writing of poetry. Students will participate in workshops and discussions and will complete assigned readings and exercises as they explore the poetic possibilities of language.

ENGL3143   **Creative Writing: Short Fiction**   3 ch (3WS) [W]

A creative writing course aimed at developing skills in the writing of short fiction. Students will participate in workshops and discussions and will complete assigned readings and exercises as they delve into the craft of storytelling.

ENGL3153   **Creative Writing: Non-Fiction (O)**   3 ch (3WS) [W]

A creative writing course aimed at developing skills in the writing of non-fiction. It involves prescribed readings, exercises, workshops, and discussions.

ENGL3163   **Creative Writing: Drama (O)**   3 ch (3WS) [W]

Taught in a workshop format, this course is designed to advance students' skills in the writing of stage plays. Students will learn through readings, presentations, and exercises, and submit work regularly for class discussion.

ENGL3170   **Advanced Drama Production**   6 ch (3 hours/wk
(Cross-Listed: DRAM 3170)   plus practical work)

A project-based course that builds on ENGL 2173/DRAM 2173 and ENGL 2174/DRAM 2174 by offering advanced training in acting, directing, and design for the theatre. Instruction centres on 1-2 full-scale theatre productions mounted by the class for Theatre UNB. Rehearsal, workshop, and performance time additional to regular class hours required. **NOTE:** Students can obtain credit for only *one* of ENGL 3170 and DRAM 3170. *Prerequisites:* ENGL 2173 (or DRAM 2173) *and* ENGL 2174 (or DRAM 2174), or equivalent.

ENGL3175   **Mainstage Production II**   3 ch (3 hours/wk
(Cross-Listed DRAM 3175)   plus practical work)

Building on the skills developed in ENGL 2175/DRAM 2175, participants in this course form a theatre company and produce, rehearse, and perform a mainstage production for the Theatre UNB season, under the direction of the instructor. Rehearsal and performance time additional to regular class hours required. Permission of the instructor is required. **NOTE:** Students can obtain credit for only *one* of ENGL 3175 and DRAM 3175. *Prerequisites:* ENGL 2175 (or DRAM 2175) or *both* ENGL 2173 (or DRAM 2173) *and* ENGL 2174 (or DRAM 2174).

ENGL3183   **Creative Writing: Screenwriting for**   3 ch (3WS) [W] (LE)
Short Formats
(Cross-Listed: FILM 3183)

This course guides writers through the basics of short format screenplay structures and introduces them to basic story, character, and dialogue principles. Students will be exposed to a wide range of short films in a variety of genres and forms so that they can explore the limits and possibilities of briefer forms of cinematic storytelling. **NOTE:** Students can obtain credit for only *one* of ENGL 3183 and FILM 3183.

ENGL3186   **Creative Writing: Feature Screenplay**   3 ch (3WS) [W] (LE)
(Cross-Listed: FILM 3186)

This intensive course guides writers through the basics of feature screenplay structure, character principles, archetypal storytelling, writing and rewriting strategies, and 'the biz.' Classes are a combination of lectures, discussion, and workshops. **NOTE:** Students can obtain credit for only *one* of ENGL 3186 and FILM 3186. *Prerequisite:* ENGL 3183 or FILM 3183 or equivalent writing experience, with permission of the instructor.

ENGL3260   **Shakespeare**   6 ch (3C) [W]

A study of selected plays.

ENGL3263   **Shakespeare's Predecessors and**   3 ch (3C) [W]
Contemporaries (A)

A study of English medieval and Renaissance drama, excluding Shakespeare.

ENGL3269   **Shakespeare Now (O)**   3 ch (3C) [W]

After we read Facebook and Twitter to find out what's happening, we turn to Shakespeare to make sense of it. This course looks at urgent twenty-first-century issues interpreted through Shakespeare's plays and related contemporary criticism and performances. Such issues might include political tyranny, war, trauma, race, sexual harassment, gender, queerness, disability, body-type discrimination, colonialism, environmentalism, and animal-human relations. **NOTE:** Students cannot obtain credit for both ENGL 3260 and ENGL 3269.

ENGL3283   **Early Renaissance Poetry and Prose (A)**   3 ch (3C) [W]

Examines a wide variety of sixteenth-century poetry and prose, including sonnets and other lyric poetry, allegorical epic, early prose fiction, statements on literary theory, and contemporaneous commentary on political events, as well as early translations of a few major works of the European Renaissance. Also explores the historical and intellectual contexts of the works, and the politics and social structures of this age of exploration and experimentation.

ENGL3284   **Poetry and Prose of the Later Renaissance (A)** 3 ch (3C) [W]
(including Milton)

Examines a wide variety of non-dramatic poetry and prose from the end of the reign of Elizabeth I to just after the Restoration (1660). The course explores the poetry of Donne and the Metaphysical poets, Jonson and the Cavalier poets, Marvell, and the gradually more numerous women writers; it also examines the new forms of prose and includes a selection of Milton's works.

ENGL3343   **The British Novel I (A)**   3 ch (3C) [W]

Among the major events of the long eighteenth century was the invention of the English novel. This course tracks the early development of the novel, from the beginnings to the early nineteenth century, and may include such authors as Behn, Defoe, Richardson, Burney, Henry and Sarah Fielding, Walpole, Godwin, Wollstonecraft, and Austen. Some attention will be paid to the social contexts of the emerging genre and to its roots in such forms as the letter, the newspaper, and broadsheet criminal biography.

ENGL3385   **The Long Eighteenth Century (A)**   3 ch (3C) [W]

Focuses on poetry and prose from the long eighteenth century (c. 1660-1790). Considers how British literature develops during this time in relation to its rapidly changing socio-political, economic, and technological environments. Authors may include Dryden, Equiano, Finch, Gray, Johnson, Leapor, Milton, Lady Wortley Montagu, Pope, and Swift. May

take an eco-critical approach or investigate literature's investments in colonial and anti-colonial perspectives.

ENGL3400   The Romantic Period (A)   6 ch (3C) [W]

Examines the major works of British literature in the Romantic period (c. 1789-1832). Focuses on the poetry and prose of Barbauld, Wollstonecraft, Blake, Wordsworth, Coleridge, Byron, Mary and Percy Shelley, and Keats. Considers the context of the tremendous social, economic, political, scientific, and cultural events of the period, including the American and French Revolutions, the industrial revolution, educational reform, and the rising tides of early feminism, abolitionism, and animal rights. **NOTE**: Students can obtain credit for only *one* of ENGL 3400 and ENGL 3406.

ENGL3406   The Romantic Period (O)   3 ch (3C) [W]

Examines brief selections of the major works of British literature in the Romantic period (c. 1789-1832), with special emphasis on the poetry and prose of Barbauld, Blake, Wordsworth, Coleridge, Byron, the Shelleys, and Keats. Considers the context of the tremendous social, economic, political, scientific, and cultural events of the period, including the American and French Revolutions, the industrial revolution, educational reform, and the rising tides of early feminism, abolitionism, and animal rights. **NOTE**: Students can obtain credit for only *one* of ENGL 3406 and ENGL 3400.

ENGL3410   Victorian Literature (A)   6 ch (3C) [W]

Examines British literature from the Victorian Age (c. 1830-1901). This was a time of great transition. Many writers, starting in the 1830s, felt a new sense of modernity, a new historical self-consciousness, and pressing moral purpose. Includes poetry, non-fiction prose (essays, scientific texts), and fiction by major and minor writers from Arnold to Wilde. Key topics include changing landscapes, visions of time, sexuality, and the co-evolution of literature and science. **NOTE**: Students can obtain credit for only *one* of ENGL 3416 and ENGL 3410.

ENGL3416   Victorian Literature (O)   3 ch (3C) [W]

Examines British literature from the Victorian Age (c. 1830-1901). This was a time of great transition. Many writers, starting in the 1830s, felt a new sense of modernity, a new historical self-consciousness, and pressing moral purpose. Features a brief selection of poems, essays, scientific texts, and short fiction by major writers, such as Arnold, Barrett Browning, Browning, Dickens, Darwin, Dante Gabriel and Christina Rossetti, Ruskin, Tennyson, and Wilde. **NOTE**: Students can obtain credit for only *one* of ENGL 3410 and ENGL 3416.

ENGL3443   The British Novel II (A)   3 ch (3C) [W]

Examines the meteoric rise of the novel throughout the long nineteenth century with a focus on major Victorian novelists (such as the Brontë sisters, Dickens, Eliot, and Hardy). Key ideas here include serialization, realism, increased literacy rates, the rising middle class, the "New Woman," and the Gothic.

ENGL3535   Modern British Poetry (A)   3 ch (3C) [W]

This course explores a variety of British poems from the twentieth and twenty-first centuries, including examples of traditional artistic concerns, technical innovations, war protest, social criticism, whimsy, emotional turmoil, and political commentary. The primary focus is on the detailed examination of a small number of selected works.

ENGL3540   The Modern British Novel (A)   6 ch (3C) [W]

This exploration of ten British novels from the twentieth and twenty-first centuries reveals the period's wide range of both social concerns and literary techniques. The varied selection of the course offers intriguing stories that display the complexities of human relationships and social conventions as well as the possibilities of technical experimentation. A sense of the overall development of the modern novel is provided by the inclusion of both early representatives and novels published within the last few years.

ENGL3605   Indigenous Literatures of Turtle Island: 3 ch (3C) [W]
A Historical Survey to the Present

A survey of Indigenous literatures across Turtle Island from before colonization to the present day, with an emphasis on historical contexts and literary developments in a variety of genres (including objects such as wampum belts and pictographs). Topics to be explored include colonial relations in pre-Confederation Canada and the US, the Trail of Tears, residential schooling, Indigenous migration and urbanization, the Sixties Scoop, the Occupation of Alcatraz, and the Truth and Reconciliation Commission. The course considers how Indigenous literatures have raised and addressed these issues over the past five hundred years. Authors may include Joseph Brant (Mohawk), E. Pauline Johnson (Mohawk), George Copway (Mississauga Ojibwe), Basil Johnston (Ojibwe Anishnaabe), Maria Campbell (Métis), Lee Maracle (Métis/Salish), Handsome Lake (Seneca), Samson Occom (Mohegan), John Ross

(Cherokee), William Apess (Pequot), Alexander Lawrence Posey (Creek), Sarah Winnemucca (Paiute), Zitkála-Šá (Sioux), Mourning Dove (Okanogan), N. Scott Momaday (Kiowa), Joy Harjo (Muscogee), Louise Erdrich (Anishnaabe), and Alicia Elliott (Tuscarora).

ENGL3606   Indigenous Literatures since 1970   3 ch (3C) [W]

This course explores key thematic and formal developments in the Indigenous literatures of Turtle Island from 1970 to the present, with a focus on texts that probe the impact of key political and cultural events on Indigenous peoples and their communities on both sides of the Canada-US border including the Oka Crisis, the Truth and Reconciliation Commission, Idle No More, the Missing and Murdered Indigenous Women and Girls Inquiry, the founding of the American Indian Movement, the Occupation of Wounded Knee, the first Two-Spirit Gathering in Minneapolis, the Native American Apology Resolution, and the Dakota Pipeline Access protests. Authors may include Louise Halfe (Cree), Leslie Marmon Silko (Laguna Pueblo), Armand Garnet Ruffo (Ojibwe Anishnaabe), Gregory Scofield (Métis), Marie Clements (Métis), Diane Glancy (Cherokee), Chrystos (Menominee), Eden Robinson (Haisla/Heiltsuk)**,** Katherena Vermette (Métis), Tanya Tagaq (Inuit), Harold Cardinal (Cree), Gerald Vizenor (White Earth Ojibwe), James Welch (Blackfeet Gros-Ventre), Simon Ortiz (Acoma Pueblo), Thomas King (Cherokee), Liz Howard (Ojibwe Anishnaabe), Jordan Abel (Nisga'a), Tommy Orange (Cheyenne/Arapaho), and Billy-Ray Belcourt (Cree).

ENGL3608   Canadian Literature to 1900 (A)   3 ch (3C) [W]

A survey of Canadian non-fiction prose, poetry, fiction, drama, and/or film from early narratives of encounter to 1900, examining key cultural and historical moments in the development of Canada as a nation. Authors may include Jacques Cartier, Samuel de Champlain, Joseph Brant, Oliver Goldsmith, Susanna Moodie, Anna Brownell Jameson, Catherine Parr Traill, George Copway, Mary Ann Shadd, Louis Riel, E. Pauline Johnson, Charles G.D. Roberts, Sara Jeannette Duncan, Bliss Carman, and Archibald Lampman.

ENGL3688   Canadian Literature 1900-1970 (A)   3 ch (3C) [W]

A survey of English-Canadian prose, poetry, drama, and/or film from the turn of the century to 1970, with a focus on the development of realism and modernism in Canada. Authors may include Jessie Sime, Stephen Leacock, L.M. Montgomery, Robert Service, Frederick Philip Grove, E.J. Pratt, F.R. Scott, A.M. Klein, Dorothy Livesay, P.K. Page, Sinclair Ross, Sheila Watson, Elizabeth Smart, Al Purdy, and Chief Dan George.

ENGL3698   Canadian Literature since 1970 (A)   3 ch (3C) [W]

A survey of English-Canadian poetry, prose, drama, and/or film from 1970 to the present. Authors may include Michael Ondaatje, Robert Kroetsch, Alice Munro, Maria Campbell, Rohinton Mistry, M. NourbeSe Philip, Thomas King, Miriam Toews, Kai Cheng Thom, and Liz Howard.

ENGL3707   American Literature before 1820 (A)   3 ch (3C) [W]

A survey of American poetry and prose from colonial times to the early nineteenth century, examining key cultural and historical moments in the development of the United States as a nation. Texts will include contact narratives, Puritan poetry and memoirs, revolutionary-era fiction and plays, and the earliest published work by Native- and African-American writers.

ENGL3708   American Literature 1820-1900 (A)   3 ch (3C) [W]

A survey of nineteenth-century American fiction, poetry, and non-fiction prose ranging from the American Renaissance to the Realist and Naturalist period. Authors may include Ralph Waldo Emerson, Henry David Thoreau, Edgar Allan Poe, Herman Melville, Nathaniel Hawthorne, Emily Dickinson, Walt Whitman, Frederick Douglass, Harriet Jacobs, Rebecca Harding Davis, Louisa May Alcott, Mark Twain, Edith Wharton, and others.

ENGL3788   American Modernism (A)   3 ch (3C) [W]

A close study of selected works of American modernism published in the first half of the twentieth century, including poetry and fiction. The course covers different varieties of modernism, such as expatriate writing, the Harlem Renaissance, and proletariat literature. Authors discussed may include Cather, H.D., Eliot, Faulkner, Fitzgerald, Frost, Hemingway, Hughes, Hurston, Larsen, Moore, Pound, Rukeyser, Stein, Stevens, Williams, Wright, and others.

ENGL3798   American Literature since 1945 (A)   3 ch (3C) [W]

A close study of selected works of American literature published from World War II to the present. The course touches on a wide variety of literary movements such as postmodernism, confessional literature, multi-racial and ethnic literature, eco-critical literature, and language poetry. Authors discussed may include Ralph Ellison, Allen Ginsberg, Sylvia

Plath, Adrienne Rich, Thomas Pynchon, Toni Morrison, Maxine Hong Kingston, John Ashbery, Don DeLillo, Louise Erdrich, and many others.

ENGL3813   **Literatures of Africa, the Caribbean,**   **3 ch (3C) [W]**
                           and South Asia (A)

A survey of twentieth- and twenty-first-century writing in English from Africa, the Caribbean, and South Asia, with an emphasis on fiction. Literature studied exemplifies themes characteristic of former colonies of invasion (e.g., the history and legacy of colonization; racial consciousness and conflict; language, identity, and difference; place, displacement, and diaspora; nationalism and globalization). Texts are discussed in their historical, cultural, and socio-political contexts, and students are introduced to some relevant theoretical concepts.

ENGL3814   **Literatures of Australia, New Zealand,**   **3 ch (3C) [W]**
                           and South Africa (A)

A survey of twentieth- and twenty-first-century writing in English from Australia, New Zealand, and South Africa, with an emphasis on fiction. Literature studied exemplifies themes characteristic of former invader-settler colonies (e.g., land and landscape; home and belonging; relations between settler populations and indigenous peoples; pluralism and multiculturalism; national identity and globalization). Texts are discussed in their historical, cultural, and socio-political contexts, and students are introduced to some relevant theoretical concepts.

ENGL3877   **Modern Drama (A)**   **3 ch (3C) [W]**

A survey of major developments in twentieth-century theatre. Plays will be studied with attention to their often controversial engagements with social and political issues, moral debates, and theatrical conventions, as well as their connections to movements such as realism, modernism, expressionism, and absurdism.

ENGL3883   **Women's Writing in English (A)**   **3 ch (3C) [W]**

A study of women's writing in English from a range of historical periods. Texts will vary from year to year, but will include poetry, drama, fiction, and/or non-fiction written primarily by British, American, and Canadian women. Attention will also be paid to relationships between women's writing and history, contemporary feminist and gender theory, and social issues such as identity, sexuality, class, and race.

ENGL3903   **Film Theory (Cross-Listed: FILM 3903)**   **3 ch (3C) [W]**

This course introduces students to the major debates in the field of film theory, including (but not limited to) Early Silent Film Theory, the Soviet Montage-Theorists, Russian Formalism and the Bakhtin School, the Historical Avant-gardes, French Auteur Theory and its Americanization, Third World Film and Theory, Genre and Authorship, Marxist film theory, Spectatorship, Feminist Film Theory, Cognitive and Analytic Theory, Postcolonial Film Theory, and Race and Ethnicity in Cinema. **NOTE**: Students can obtain credit for only *one* of ENGL 3903 and FILM 3903.

ENGL3907   **Film Genre (O)**   **3 ch (3C) [W]**
                     (Cross-Listed: FILM 3907)

The Film Genre course explores the history, iconography, and socio-cultural significance of one particular film genre by means of a number of examples. The specific focus of the course varies from year to year. **NOTE:** Students can obtain credit for only *one* of FILM 3907 and ENGL 3907.

ENGL3908   **Zombies in Film (O)**   **3 ch (3C) [W]**
                     (Cross-Listed: FILM 3908)

Zombie films make up one of the longest living sub-genres of horror though representations of zombies have evolved from exoticized monstrous figures from Haiti to cannibalistic brain eaters and eventually to infectious bodies carrying epidemics. This course will explore the evolution of zombies from studio pictures starring Bela Lugosi to B-movies featuring fighting ninjas and murdering cheerleaders through to modern film zombies who look uncannily like the unconscious bored populace and/or become loving family pets. Zombies are never simply undead; they always reflect something about our changing lives and fears. These films also permit us to explore the murky spaces between high and low culture, the history and development of horror films as a genre, and the aesthetics of fear. **NOTE:** Students can obtain credit for only *one* of ENGL 3908 and FILM 3908.

ENGL3916   **Canadian Film since 1967 (O)**   **3 ch (3C) [W]**
                     (Cross-Listed: FILM 3916)

Through the study of various representative Canadian filmmakers and prevalent genres, this course explores the roles that regionalism, commercialism, and independent filmmaking play in defining national ideas about Canadian cinema and film audiences. This course concurrently traces developments in Canadian film production, policy, funding, distribution, and use since the creation of Telefilm (formerly the CFDC) and how these funding and cultural policies have affected and

responded to the central themes and issues facing Canadian filmmakers and audiences. **NOTE:** Students can obtain credit for only *one* of ENGL 3966, ENGL 3916, and FILM 3916.

ENGL3917   **National Cinemas (O)**   **3 ch (3C) [W]**
                     (Cross-Listed: FILM 3917)

The National Cinemas course explores significant historical periods, movements, styles, film theories, directors, and topics in the development of particular national and/or transnational cinemas. The specific focus of the course varies from year to year.

ENGL3918   **The French New Wave (O)**   **3 ch (3C) [W]**
                     (Cross-Listed: FILM 3918)

One of the most exciting movements in cinema, the French New Wave radically altered film, influencing and informing new kinds of cinema around the world and changing how we talk about and study films. The films of filmmakers like François Truffaut, Claude Chabrol, and Jean-Luc Godard continue to inspire contemporary filmmakers and critics. Through watching and analyzing their first films, reading their writings in *Cahiers du Cinéma,* and exploring how film historians interpret this period now, we will attempt to understand the artistic, social, economic, and historical forces that shaped the film movement and filmmaking in the decades to follow. **NOTE:** Students can obtain credit for only *one* of ENGL 3918 and FILM 3918.

ENGL3978   **Monsters and the Grotesque in Literature (O)**   **3 ch (3C) [W]**

This course explores images of monsters, monstrosity, and the grotesque in literary texts from various periods. It proceeds from the premise that monsters and grotesque bodies offer radical images of the "other" and that our fascination with these assemblages of familiar parts into unfamiliar wholes speaks to human anxieties and confusions regarding identity, boundaries, security, and sexuality. Discover how the at-once attractive and repulsive images of monstrosity and the grotesque playfully "embody" the ambivalences of the cultures that produce them. Using insights drawn from various cultural and intellectual traditions, we consider how literature employs monstrous and grotesque images to imaginatively address human problems.

ENGL3983   **Literature and the Environment (O)**   **3 ch (3C) [W]**

Reading a diverse array of ecologically oriented poetry, fiction, non-fiction, and theory, students will examine how literary forms engage non-human life. Possible areas of focus include human-animal encounters, Indigenous ways of knowing, river literature, ocean literature, the energy humanities, posthumanism, race and environment, eco-poetics, eco-film, visual art, and activist literature. Students are invited to engage creatively with their literary and lived environments through written assignments, in-class discussion, and forays into the great wild world around us.

ENGL3985   **The Body in Literature (O)**   **3 ch (3C) [W]**

Many visceral notions - that is, ideas about bodies - may seem new to us; transgender, mental health, feminism, anti-racism, and bioethical concerns come to mind. Yet literary texts from a variety of periods anticipate many of these fields and often do so with scant attention to social acceptability. This course focuses on bodily matters as they appear in poetry, drama, and prose: desire, illness, technology, emotion, gender, race, species, suffering, aging, pleasure, etc.

ENGL3987   **Fashioning the Nation (O)**   **3 ch (3C) [W]**

This course explores the recent significance of television, its impact on the fashion industry, and the ways in which television itself has become part of the business of the creation, marketing, and consumption of fashion, from *haute couture* to mass market brands. In particular, the course considers the implications of the coupling of fashion and television for contemporary definitions of citizenship. Texts range from novels and children's books to episodes of *Sex and the City*, *What Not to Wear* (British and US versions), *Mad Men*, *Fashion Police*, *House of Cards*, and *Project Runway*.

ENGL4170   **Thesis Production and**   **6 ch (practical work)**
                     Independent Project
                     (Cross-Listed: DRAM 4170)

Open to students completing the final year of a Double Major or Minor in Drama. Working in groups, students produce a full-scale production for Theatre UNB. The second requirement for the course is to complete an independent project designed to further students' knowledge of a theatre discipline of their choice. Both halves of the course are completed under the supervision of the Director of Drama. **NOTE**: Students can take no more than 6 ch of ENGL 4170 (or DRAM 4170), ENGL 4173 (or DRAM 4173), and ENGL 4174 (or DRAM 4174) for credit. *Prerequisites:* ENGL 2173 (or DRAM 2173) and ENGL 2174 (or DRAM 2174) and ENGL 3170 (or DRAM 3170), and permission of the Director of Drama.

ENGL4173   **Thesis Production**   **3 ch (practical work)**
(Cross-Listed: DRAM 4173)

Open to students completing the final year of a Double Major or Minor in Drama. Working in groups, students produce a full-scale production for Theatre UNB, under the supervision of the Director of Drama. **NOTE**: Students can obtain credit for only *one* of ENGL 4173, DRAM 4173, ENGL 4170, and DRAM 4170. *Prerequisites:* ENGL 2173 (or DRAM 2173) and ENGL 2174 (or DRAM 2174) and ENGL 3170 (or DRAM 3170), and permission of the Director of Drama.

ENGL4174   **Independent Drama Project**   **3 ch (practical work)**
(Cross-Listed: DRAM 4174)

Open to students completing the final year of a Double Major or Minor in Drama. Under the supervision of the Director of Drama, students complete an independent project designed to further their knowledge of a theatre discipline of their choice. **NOTE**: Students can obtain credit for only *one* of ENGL 4174, DRAM 4174, ENGL 4170, and DRAM 4170. *Prerequisites:* ENGL 2173 (or DRAM 2173) and ENGL 2174 (or DRAM 2174) and ENGL 3170 (or DRAM 3170), and permission of the Director of Drama.

ENGL5083   **Literary Theory and Critical Practice**   **3 ch (3C) [W]**

A study of the development of literary theory and criticism, with some attention to critical practice. Required for the Single and Joint Honours programs. **NOTE**: Students cannot obtain credit for both ENGL 3083 and ENGL 5083.

ENGL5127   **William Blake's Early Illuminated Poetry (O)**   **3 ch (3S) [W]**

"I must create a system or be enslaved by another man's" – so wrote William Blake (1757-1827), a radical Romantic poet-engraver, painter, and printmaker. In this course, we will examine some of Blake's best known early illuminated poems, many of which Blake produced during an exceptionally productive and turbulent period of the 1790s, when he lived in Lambeth, on the south side of the Thames. In addition to close readings and grappling with Blake's visionary mythology, we will keep a food in what Saree Makdisi, in his study of Blake, aptly calls "the impossible history of the 1790s." Against the caricature of Blake as an ahistorical madman-artist outside of his own time, we will track how Blake's work confronts the economics, politics, religion, and emergent ideas in the arts and sciences of the Romantic era. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5138   **Beasts and Beauties (O)**   **3 ch (3S) [W]**

Woof. Meow. Oink. This course examines the wide array of representations of animals in nineteenth-century British literature. While acknowledging the importance of Darwinian evolutionary theory, we will focus on the literary and artistic representations of humanity's changing relationship with the animal. Threaded throughout the novels, poetry, essays, political cartoons, and taxidermy art, the figure of the animal becomes a vexing intersection for the overlapping discourses of race, gender, class, community, and ethics in the nineteenth century. At once an object to be preserved and displayed in the cabinets of natural history, the animal was also garnering increased sympathy and legal protection as new societies against animal cruelty were founded and Acts were passed (e.g., the Cruelty to Animals Act, 1876). In order to enrich our understanding of the animal's role within the nineteenth-century British imaginary, we will consider popular representations of nineteenth-century animality, including the political cartoons of James Gillray and the public's response to the development of zoos. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5144   **Poverty and American Literature (O)**   **3 ch (3S) [W]**

A striking feature of the United States is the weakness of its welfare state. One reason for this weakness is many Americans' belief that welfare recipients fall into the category of the undeserving poor: citizens who are responsible for their poverty. This course explores literary texts that address the causes and effects of poverty and grapple with the problem of representing it. The course asks questions like the following: How have the aesthetics of poverty changed since the early twentieth century? How might writers represent the poor without abjectiing them? *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5148   **African-American Literature (O)**   **3 ch (3S) [W]**

"The problem of the Twentieth-Century is the problem of the color line," W.E.B. Du Bois announced in 1903. Du Bois wrote when Jim Crow racism was firmly in place in the United States, segregating African Americans, ensuring their impoverishment, and denying them political representation. This course explores Jim Crow's legacy in twentieth- and twenty-first century African-American literature. Why are Americans still haunted by Jim Crow? What would it take to exorcise that ghost? *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5167   **The American Sitcom and Feminist Theory (O)**   **3 ch (3S) [W]**

This course examines American sitcoms and feminist writing and activism from the 1950s to the present. Taking into account the generic conventions of the situational comedy, the seminar explores how the sitcom has engaged with debates within feminist thought, especially around race, economic structures, gender and sexual identities, reproductive rights, and gender-based violence. By linking theory to television, the course investigates both intellectual and activist history and the ways corporate culture resists, responds to, and creates social change. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5182   **Rethinking the Gothic in English-Canadian**   **3 ch (3S) [W]**
Literature (O)

In his well-known satirical poem, aptly titled "Can. Lit., (1962)" Earle Birney argues that "[i]t's only by our lack of ghosts that we're [Canadians] haunted." Paradoxically, Birney subsequently stirred substantial debate over what spectres continue to shape English-Canadian literature and, more broadly, Canada as a nation. Birney is one in a long line of writers who recognize the fundamentally ambivalent relationship between colonialism and haunting as manifested in our national literature and culture, ranging from poems and short stories to plays, novels, paintings, and films. This course explores and wrestles with critical and creative work written over the last forty years that characterizes and labels Canadian texts as "Gothic." We probe the benefits and liabilities of employing the "Gothic" label to describe the work of BIPOC writers and artists, especially those who may see such terms as a colonial stamp of approval. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL 5184   **Identity in Atlantic-Canadian Literature (O)**   **3 ch (3S) [W]**

In this course, we will examine the central theme of identity in the poetry, fiction, drama, and film of contemporary Atlantic Canada. We will study a diverse range of primary course texts, addressing key questions concerning personal and collective identities as they relate to race, class, gender, sexuality, ability, and region. Region will indeed play a significant role in our readings of these texts – from the representation of racism and violence in Halifax-based poet El Jones's spoken word pieces and the social tensions of 1940s Fredericton in George Elliott Clarke's novel *George & Rue* to Maritime mental health care in Lynn Coady's *Strange Heaven* and the (figurative and literal) journey of two Two-Spirit brothers in Bretton Hannam's short film *Wildfire*. Our central readings of authors from the Maritimes and Newfoundland will be guided by secondary sources about issues related to Atlantic-Canadian histories and identities. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5623   **Re-imagining the Long Poem:**   **3 ch (3S) [W]**
Critical and Creative Perspectives (O)

In 1979, Michael Ondaatje announced that "the most interesting work being done by poets today can be found within the structure of the long poem." More than thirty years later, Ondaatje's statement still applies. This course is designed to offer a survey of contemporary Canadian long poems. Using sections of Smaro Kamboureli's study *On the Edge of Genre* as a framework for class discussion, we will explore such issues as: the long poem's relationship with genre and postmodernism; formal structures and innovations in the long poem; the tension between lyric and narrative in the long poem; and identity politics within the long poem. Poets studied include Dionne Brand, Anne Carson, George Elliott Clarke, Robert Kroetsch, Daphne Marlatt, Don McKay, Erín Moure, bpNichol, Michael Ondaatje, Lisa Robertson, and Phyllis Webb. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL5684   **Indigenous Futurism: Speculative**   **3 ch (3S) [W]**
Fiction and New Media for a New World (O)

How can Indigenous epistemologies help in a world on the edge of economic, environmental, and spiritual catastrophe? This course examines how Indigenous authors use science fiction to reimagine the present and future of Indigenous communities. We explore what alternate realities authors envision and how they repurpose sci-fi conventions to reflect Indigenous knowledge and histories and to address issues such as colonization, history, land claims, and environmental destruction. The course examines a range of topics including time travel and reclaiming history, as well as dystopian visions of the city, the land, and the body. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENGL 5983   **Women's Writing in the Atlantic World (O)**   **3 ch (3S) [W]**

This seminar explores writing in English from the early modern to the contemporary period by English women and by Indigenous, Black, and Settler women living in what we now call northeastern North America. The Atlantic World is defined by the colonial project that links the Americas with England and western Africa and by the circulation of commodities, ideas, diseases, and enslaved and free people. The course looks at how women's writing variously participated in or resisted this colonial history in thinking about issues such as race, slavery, nature, place, violence,

history, and gender and sexuality. *Prerequisite:* B+ average in ENGL; open to ENGL Honours students.

ENVIRONMENTAL STUDIES

See beginning of Section H for abbreviations, course numbers and coding.

ENVS2003   Environmental Management: 3 ch (3 C/S)
**   People, Policy & Planning**

This course broadly covers issues relating to the impact of human activity on air, water and soil environments. It covers the causes and effects of pollution, challenges to remediation, and suggests courses of action for reducing human impact. In addition to formal lectures, the course will include guest lectures, special projects, debates and advocacy efforts to improve the environment.

ENVS2023   Climate Change   3 ch (3C)

This course begins with an overview of the science of climate change and its historical/projected impacts on environmental, social, and economic systems. Then, mitigation and adaptation policy options that are available to Canada and other countries will be investigated. Particular issues that may be addressed include the role that humans play in creating climate change, the uncertainty involved in making future climate change projections, and municipal plans to adapt to climate change.

ENVS4001 Environmental Impact Assessment and Management 3 ch (3C)

This course focuses attention on the implementation of environmental problem solving techniques. Students will learn many practical methods for assessing problems and justifying solutions. These may include such activities as preparing media pieces and briefing notes to government officials, setting up environmental impact assessments and audits, testing for water/soil/air contamination, and surveying the public/industry on various issues. Throughout these activities, students will be required to critically examine the social, political, philosophical, economic, and ecological outcomes of their activities.

ENVS4002   Stakeholder Approaches to Environmental   3 ch (3 C/S)
**   Problem Solving**

Most environmental issues have many sides including scientific, social, political, and economic, and comprise multiple players and stakeholders promoting divergent points of view. This course is designed to explore these elements in detail. Current national, regional and local problems will be brought to the class by a number of guest speakers in order to help students critically analyze the roots of the problems and possible solutions. The problems discussed will include such issues as environmental scope, biodiversity decline, climate changes, air and water quality, population and consumption per capita, biotechnology and genetically altered foods.

ENVS5003   Environmental Management Tools   3 ch (3C)

Presents students with a wide array of tools used to assess and manage activities that impact the environment. Tools considered may include environmental indicator measurement, environmental risk assessment, life-cycle assessment, environmental management systems, sustainable forest management certification, and others. Presentations will be given by faculty members, students, and working professionals that demonstrate the use of these environmental management tools and identify issues associated with them. Credit cannot be obtained for both ENVS 5003 and ENVS 6003.

ENVIRONMENT AND NATURAL RESOURCES

The section contains course descriptions for students entering the Bachelor of Science in Environment & Natural Resources program. See beginning of Section H for abbreviations, course numbers and coding.

ENR1001   Professional Skills in Forestry and   3 ch (3C 2L) [W]
**   Environmental Management**

Develop professional abilities essential for a successful academic and professional career through direct study, research, report writing, and giving presentations on current environmental issues, solving system design problems, developing a resume, and practicing interviewing skills. Learning outcomes include introductory level information acquisition and management, oral and written communication, critical thinking, structured problem solving, and time management.

ENR1002   Resource Management Issues, Ethics   4 ch (3C 3L)
**   and Communication**

Following on Resource Management Issues I, this course will increase a student's ability to detect and describe breadth, depth, and complexity of contemporary resource management and environmental issues. This course, in addition to building on oral and written communication skills, will provide students with opportunities to explore the use and abuse of a variety of communication tools: visual media, the role of art in

contemporary environmental discourse, writing and producing video documentaries, doing radio spots, and interacting with journalists. Focus will be on the theoretical and technical aspects of environmental communication. Ethical issues in science, social science, communications and resource management will be presented. *Prerequisite:* ENR 1001.

ENR2004   Social and Cultural Systems   3 ch (3C)

In this course students will learn how to describe and measure the structure and function of human communities; and determine how different social and ethnic groups perceive and relate to the physical environment. We will discuss major environmental movements and describe social values, how they change, what influences them and how they result in policy reform and behavioural change. We will cover basic sociological theory including topics such as institutions, the nature of capitalism, and the philosophical underpinnings of resource management (e.g. property rights, religious traditions). The course will also cover basic political theory, with a focus on democracy and democratic processes. This course draws on methods and readings from a variety of disciplines, including social ecology, environmental sociology, rural sociology, social network theory, history, and anthropology.

ENR2021   Natural Resource Management, Institutions,   3 ch (3C)
**   Policy and Governance**

This course examines how resource and environmental management systems and tools are developed in cultural and institutional contexts and how these contexts shape the definitions of problems and the management systems proposed as solutions. Included will be analysis of different management regimes and decision-making processes: technocratic, community-based, co-management, network governance, etc. In each case, we will examine the scale of the management issue (local, regional, national, international) and in that context, who has authority, legitimacy, power, accountability, and why; how they obtain, maintain, and enhance them; and implications of each in terms of different management contexts (e.g. common pool resources). Traditional policy-making models will be presented, as well as analytical tools for policy evaluation. Students will develop, defend, and critique a variety of different types of natural resource management plans that involve large-scale environmental changes (including water, air, and land issues), and develop adaptive management strategies that simultaneously account for human and natural systems.

ENR2114   Water Sustainability: Practice and Technology (O)   3 ch (3C)

The theme of this course is how humans impact the environment with our developing technologies. The course examines how aquatic ecosystems are altered by the activities of agriculture, forestry, aquaculture, solid waste disposal, our demands for industry, e.g., pulp and paper, manufacturing, and mining, and our basic needs for clean drinking water, e.g., water and sewage treatment. The course appraises evolving, alternative technologies, with visits to some of these operations to learn how new technologies are reducing impacts and protecting water resources for the future.

ENR2531   Introduction to Hydrometeorology Systems   3 ch (2C 3L)

This course provides an introduction to the principles of environmental hydro-meteorology. Topics to be covered include energy transfer, radiation laws, energy balance, wind generation, evaporation and precipitation, climatology, snow cover and snow melt processes, the hydrological cycle and water budget, surface runoff, flow routing, and atmosphere-land surface processes associated with land use. These are addressed from small, localized to regional scales. *Prerequisites:* ESCI 1063, ESCI 1036.

ENR3000   Indigenous Issues and Perspectives   3 ch (1C)
**   in Natural Resources Stewardship**

This course introduces students to Indigenous culture, knowledge and worldviews as these relate to both Indigenous and western traditions of natural resource management. The course will cover Indigenous understanding of their relationships with nature and a basic introduction to institutional and policy issues. The course will treat the dynamics of Indigneous institutions and how these relate to and interact with institutions of western society.

ENR3002   Applied Environmental Management   4 ch (3C 3L)

This course is designed to help students strengthen their skills in: (a) environmental management decision-making, (b) problem-solving, (c) teamwork and project management, and (d) articulating environmental awareness, with strong commitment to environmental sustainability. The course builds on professional and natural resource basics and management competencies developed in earlier courses and will focus on decision making by examining financial, political, and stakeholder acceptability factors, as well as conducting environmental risk assessment and trade-off analyses making appropriate use of models. *Prerequisites:* FOR 2006.

501

ENR3111   **Estuary & Ocean Ecosystems (O)**   **3 ch (3C)**

A course focusing on the structure of the juncture of rivers and oceans, the animals that live there, how they are adapted to the highly variable but not necessarily unpredictable conditions of water depth, direction of movement, salinity, temperature and water chemistry. Estuaries serve also as corridors for the exchange of nutrients, energy and pollutants between inland areas and the ocean. Estuaries and the coastal environment are where most of us live and work and we are the largest single impact on estuarine and coastal ecology. These impacts, how coastal environments are being changed by them, how we measure these changes and what can be done to mitigate these impacts will be examined by students through individual and team projects, debates, and presentations. *Prerequisites:* BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017.

ENR3112   **Water Resources Management**   **3 ch (3C)**

An Introduction to Integrated Water Resources Management, this is a broad examination of critical concepts and knowledge needs including essential human and institutional capacities. Topics include: impacts of anthropogenic alterations on the water cycle; changes and impacts that occur as a result of land use change and development; aquatic ecosystem health and impact assessment; water use (quality and quality issues); wastewater issues including impacts, methods of treatment and mitigation, the urban water cycle and methods to evaluate and choose appropriate technologies; governance and capacity building in communities; and building and maintaining water management infrastructure. *Prerequisites:* BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017, ENR 1532.

ENR3201   **Urban Hydrology and Water Management**   **3 ch (2C 3L)**

This course focuses on hydrological theories and tools needed for urban watershed management, involving water supply, conservation and treatment. Topics include storm-water retention on and flow through porous and impervious surfaces, and subsequent run off generation. Students will learn about urban water management systems and best - management engineering approaches dealing with flood control and point to non-point residential, industrial and traffic-induced pollution issues.

ENR3261   **Data Analysis for Natural Resources**   **3 ch (2C 3L)**

Develop a foundation in statistical data analysis with a focus on application in natural resources sciences. Build upon concepts introduced in STAT 2264/2263 and explore how researchers and managers move from formulating questions to collecting data to analyzing results. Investigate approaches to study design with review of a range of statistical tests including t-tests, ANOVA, ANCOVA, correlation, and different forms of regression, with examples based in natural resources science. Gain valuable hands-on experience in statistical analysis in R. *Prerequisite:* STAT 2264 or STAT 2263.

ENR3532   **Ecohydrology**   **3 ch (3C)**

An expansion of the introduction to hydrological principles and processes offered in first year. Students develop their comprehension of the hydrological cycle, and dynamics and prediction of flow of water in rivers, lakes, and as groundwater. Hydrological processes at the landscape level are emphasized to demonstrate the connections among hydrology, biology, and the exploitation of water resources by humans. *Prerequisites:* ESCI 1001 or ESCI 1063, ESCI 1036.

ENR3888   **Individual Project I**   **3 ch**

Credit for an individual project can be granted. The student arranges each project with a client and a Faculty advisor. Your Programme Director must approve each project prior to beginning. A signed agreement including assessment criteria amongst the student, client, Faculty Advisor and Programme Director is required.

ENR4020   **Management Practicum**   **8 ch (3C 3L)**

The course provides students with an opportunity to pool their resources and demonstrate their expertise. Working in multidisciplinary teams, students will develop and integrated solutions to a real world environmental or natural resource management problem. In addition, students will learn how to manage work plans, projects and planning process. *Prerequisite:* ENR 3002.

ENR4101   **Professional Internship in Forestry and**   **3 ch (3C) (LE) [W]** **Environmental Management (Cross-Listed: FOR4101)**

Under the supervision and mentorship of a senior manager with an industrial, government, environmental non-governmental organization (ENGO) or community agency, students will observe supervision, supervise others, get feedback, critically reflect on their experience by combining academic and experiential supervision knowledge, and present it in a written report and oral presentation. In addition to supervision, students will enhance their formal and informal critical thinking and communication abilities. Enrollment is limited and students need to

contact the Faculty's Student Services Coordinator before registering. Students cannot receive credit for both ENR 4101 and FOR 4101. *Prerequisite:* Prior work experience and either ENR 3002 or FOR 3000.

ENR4111   **Fisheries and Aquatic Sciences Techniques**   **3 ch (3C)**

Students will gain knowledge in techniques used commonly in fisheries and aquatic science, getting practical experience in various sampling and analysis techniques, including: water quality assessment, macroinvertebrate collections, fish collections (e.g., seining, trapping, electrofishing), and laboratory methods for sample preparation and analysis. All field collections will be followed by appropriate data evaluation learning database management techniques, descriptive and analytical statistics, and summary report writing. *Prerequisites:* BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017.

ENR4888   **Individual Project II**   **3-5 ch**

Credit for an individual project can be granted. The student arranges each project with a client and a Faculty advisor. Your Programme Director must approve each project prior to beginning. A signed agreement including assessment criteria amongst the student, client, Faculty Advisor and Program Director is required. Number of credit hours will be determined by the Faculty and based on the nature, duration, and complexity of the project. Credit hours assigned to the course must be determined prior to the student initiating the project.

ENR4973   **Environmental Management Field Camp**   **2 ch (6 Days)**

An intensive 6-day series of field exercises, site visits, and on-site discussions before the start of Fall term courses. This course involves low student/faculty ratios and is designed to improve integrative, observational, and interpretive skills with respect to environmental conditions, including water, wildlife, and forest resources, and the social context in which they are valued and used. Evening sessions provide opportunity for debate and discussion of challenging contemporary environmental issues. Students are charged for food, lodging and part of travel costs. *Prerequisite*: Completion of least 80 credit hours of course courses.

ENR4991   **Honours Project**   **6 ch [W]**

ENR honours students must complete a thesis project that is approved by the Faculty and supervised by a Faculty member. This course involves submitting a detailed project report and an oral defense in a seminar-style presentation. Students should consult with a faculty advisor prior to the end of third year to discuss project requirements and potential topics. **NOTE**: Minimum CGPA for acceptance is 3.0

FAMILY VIOLENCE ISSUES

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

FVI2001   **Introduction to Family Violence Issues**   **3 ch** **(Cross-Listed: SOCI 2001)**

Introduction to current theories, research and practice in family violence issues. Topics will include: themes of violence; dynamics of violence; gender relations; attitudes, myths, and realities surrounding family violence; public versus private nature of family violence. Research from various perspectives will be evaluated. Students get credit for either FVI 2001 or SOCI 2001. *Prerequisite:* Admission to the Certificate Program or permission of the instructor.

FVI2002   **Antecedents and Patterns of Family Violence Issues**   **3 ch**

Provides a historical and current overview of the societal catalysts/contributors to, and the patterns of, family violence. Explores why members of marginalized groups (e.g., the poor, women, children, immigrants, First Nations persons, gays, lesbians, disabled and the elderly) are often at especially high risk of being victimized by violence in intimate relationships. *Prerequisite:* Admission to Certificate Program or permission of the instructor.

FVI3006   **Intervention Strategies and Programs for People**   **3 ch (3C) [W]** **(Cross-Listed: SOCI 3006)**

This course will examine the major theories related to violence in intimate relationships and explore the different intervention strategies and programs which have evolved from these theories. Credit cannot be obtained for both FVI 3006 and SOCI 3006.

FVI3007   **Religion and Violence (O)**   **3 ch (3C) [W]** **(Cross-Listed: SOCI 3007)**

This course examines issues pertaining to violence in religious families and the role of faith communities (and their leaders) in responding to violence in the family context. It will consider relevant data, theories, and strategies for change. Normally taught online.

FVI3634   **Violence Against Women**   **3 ch**
(Cross-Listed: SOCI 3634)

Examines issues pertaining to violence against women in Western society, including gender socialization, gender dynamics in dating and family relationships, private versus public, the contributions of social institutions (e.g., sports; the media; schools; the workplace; the military; the medical, legal and criminal justice systems) and the special vulnerability of women in marginalized groups. *Prerequisite:* 3 ch from any SOCI course.

FVI4002   **Multidisciplinary Approaches to Family Violence**   **3 ch**

Presents strategies which will assist professionals in coordinating their efforts to help survivors through creation of 'whole person' community approaches. Topics include: helping agencies' diverse and overlapping mandates; referral processes; inter-agency communication; support and debriefing; team dynamics; community resources; interface with policy makers. This course is required for the FVI Certificate. *Prerequisite:* Six credit hours from FVI 2001, FVI 2002, FVI 2003 (or SOCI 1563); or permission of the instructor.

FVI4005   **Individual Studies**   **3 ch**

An individualized study of a topic of interest to the student, in consultation with instructor/mentor and approval of the Director of the Muriel McQueen Fergusson Centre for Family Violence Research. *Prerequisite:* Six credit hours from FVI 2001, FVI 2002, FVI 2003 (or SOCI 1563); or permission of the instructor.

FILM

See beginning of <u>Section H</u> for abbreviations, course numbers, and coding.

FILM2022   **The Art of Film (Cross-Listed: MAAC 2022)**   **3 ch (3C) [W]**

Introduces students to the language of motion pictures and to critical tools for discussing and writing about the 7th art – the art of film. By studying how movies function aesthetically and how they become meaningful to audiences, students will acquire critical and formal analytical skills that will both enhance their appreciation for cinema and serve them more broadly as consumers and/or producers of visual culture. Topics will include *mise-en-scène*, framing, image composition, photographic space, colour, editing, sound, and narrative structure. **NOTE:** Students can obtain credit for only *one* of FILM 2022 and MAAC 2022.

FILM2909   **International Film History**   **3 ch (3C) [W]**
(Cross-Listed: ENGL 2909)

This course introduces students to major stages in the development of film as an international art. Topics include Silent Cinema, German Expressionism, Soviet Montage, Classical Hollywood, Italian Neorealism and Modernism, French New Wave, Japanese New Wave, British New Wave, Australian New Wave, Experimental Cinema, Cinema Novo, New German Cinema, Postcolonial Cinema, Bollywood, the New Hollywood, American Independent Cinema, Dogme 95, and others. **NOTE:** Students can obtain credit for only *one* of ENGL 2909 and FILM 2909.

FILM2998   **Digital Film Production I**   **3 ch (3C)**
(Cross-Listed: MAAC 2998)

An introduction to the fundamental concepts and procedures of visual and audio production, including the techniques and aesthetics of shooting, lighting, and editing. Over the course of the term, students will engage in a series of short exercises covering a variety of styles, genres, and modes. Taught cooperatively with the New Brunswick Filmmakers' Co-op. **NOTE:** Students can obtain credit for only *one* of the following courses: FILM 2998, MAAC 2998, FILM 3999 "Video Production," MAAC 3999 "Video Production," ENGL 3999 "Film and Video Production." Students may take both FILM 2998 (or MAAC 2998) and FILM 3999 "Editing and Post-Production" (or MAAC 3999 "Editing and Post-Production").

FILM2999   **Digital Film Production II**   **3 ch (3C)**
(Cross-Listed: MAAC 2999)

This second course in the production sequence puts emphasis on applications of skills learned in FILM 2998/MAAC 2998 by focusing on production of several short projects in various formats. Group work and analysis of student productions constitute the main course activities. Taught cooperatively with the New Brunswick Filmmakers' Co-op. **NOTE:** Students can obtain credit for only *one* of FILM 2999, MAAC 2999, FILM 3998, MAAC 3998. *Prerequisite:* MAAC 2998, or permission of the instructor.

FILM3066   **Trauma and Seduction:**   **3 ch (3C) [W]**
Early German Cinema (A)
(Cross-Listed: CCS 3066 and MAAC 3066)

Beginning with the earliest silent movies and concluding with National Socialist propaganda films, this course offers an introduction to a prolific and important era in German film history: the Weimar Republic and pre-

WWII period, 1918-1939. Our discussions will situate the films within larger political and cultural discourses. Emphasis will be placed on such topics as the cinematic response to the trauma of WWI; German national identity; expressionism and modernity; the politics of gender and sexuality; the impact of sound on film aesthetics; the relationship between cinema and other media; the ethics of film production. Films to be studied include features by directors such as Lang, Lubitsch, Murnau, Pabst, Riefenstahl, Sagan, von Sternberg, and Wiene. In English. **NOTE:** Students can obtain credit for only *one* of GER 3066, WLCS 3066, CCS 3066, FILM 3066, and MAAC 3066.

FILM3072   **Contemporary German Cinema and Media (O) 3 ch (3C) [W]**
(Cross-Listed: CCS 3072 and MAAC 3072)

This course covers recent German cinema and media with a focus on acclaimed productions by new directors for film, television, and streaming platforms. The creative work of women directors, and themes of gender, subjectivity, and intimacy are especially highlighted. Other topics include: The Berlin School and its visual and narrative style, the continued preoccupation of filmmakers with the nation's past, comedy and satire in Germany, and the influence of the 1970s (the feminist film movement, the New German Cinema, etc.) on the new generation. *Prerequisite:* Open to students who have completed at least 30 ch of university courses or by permission of the instructor. **NOTE:** Students can obtain credit for only *one* of FILM 3072, GER 3072, WLCS 3072, CCS 3072, CCS 3074, and MAAC 3072.

FILM3075   **Framing Reality: Theory and Practice of**   **3 ch (3C)**
Documentary Media (A) (Cross-Listed: MAAC 3075)

This course surveys the history and aesthetics of non-fiction filmmaking from the birth of cinema to the digital age. It will examine epistemological and ethical questions raised by documentary's encounter with reality and its attempt to present "the truth." Films screened are drawn from an array of nations and range from the personal to the political as well as more experimental and avant-garde works. The course includes a film production component as students apply what they have learned in class by producing a short non-fiction film as a final project. **NOTE:** Students can obtain credit for only *one* of FILM 3075 and MAAC 3075. *Prerequisite:* Open to students who have completed at least 45 ch at the university level.

FILM3082   **History of Canadian Cinema (A)**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3082 and MAAC 3082)

Focuses on the first half-century of filmmaking in Canada and the nation's long struggle to develop and sustain a functioning film industry in the shadow of Hollywood. Readings and screenings trace the history of the movies in Canada from the silent era to the 1970s. Issues raised may include Canadian/American relations, national and regional identities, tensions between art and entertainment, media and cultural policy, representation of race, class, and gender, and relation of Canadian film to other media (TV, radio, video) and other arts (painting, music, literature) in Canada. **NOTE:** Students can obtain credit for only *one* of CCS 3082, FILM 3082, WLCS 3082, and MAAC 3082. *Prerequisite:* Open to students who have completed at least 45 ch, or with permission of the instructor.

FILM3183   **Creative Writing: Screenwriting for Short**   **3 ch (3WS) (LE)**
Formats
(Cross-Listed: ENGL 3183)

This course guides writers through the basics of short format screenplay structures and introduces them to basic story, character, and dialogue principles. Students will be exposed to a wide range of short films in a variety of genres and forms so that they can explore the limits and possibilities of briefer forms of cinematic storytelling. **NOTE:** Students can obtain credit for only *one* of FILM 3183 and ENGL 3183.

FILM3186   **Creative Writing: Feature Screenplay**   **3 ch (3WS) (LE)**
(Cross-Listed: ENGL 3186)

This intensive course guides writers through the basics of feature screenplay structure, character principles, archetypal storytelling, writing and rewriting strategies, and 'the biz.' Classes are a combination of lectures, discussion, and workshops. **NOTE:** Students can obtain credit for only *one* of FILM 3186 and ENGL 3186. *Prerequisites:* FILM 3183 or ENGL 3183, or equivalent writing experience, with permission of the instructor.

FILM3204   **Music and Cinema (Cross-Listed: MUS 3204)**   **3 ch**

A practical and theoretical examination of the role of music in cinematic narrative from the silent film to the 21st century. The course will examine the origins of the music-cinema relationship from the misnamed "silent film era" through the development of synchronized sound-film systems and the use of music in a selection of genres including film noir, musical, science fiction, romantic comedy and suspense films. Music video production processes will be explored including the use of narrative storytelling techniques, as well as animation, Claymation, multimedia and experimental methods of creating images to synchronize with existing

soundtracks. **NOTE:** Students can obtain credit for only *one* of FILM 3024 and MUS 3024.

FILM3903   Film Theory (Cross-Listed: ENGL 3903)   3 ch (3C) [W]

This course introduces students to the major debates in the field of film theory, including (but not limited to): Early Silent Film Theory, the Soviet Montage-Theorists, Russian Formalism and the Bakhtin School, the Historical Avant-gardes, French Auteur Theory and its Americanization, Third World Film and Theory, Genre and Authorship, Marxist film theory, Spectatorship, Feminist Film Theory, Cognitive and Analytic Theory, Postcolonial Film Theory, and Race and Ethnicity in Cinema. **NOTE:** Students can obtain credit for only *one* of ENGL 3903 and FILM 3903.

FILM3907   Film Genre (O)   3 ch (3C) [W]
(Cross-Listed: ENGL 3907)

The Film Genre course explores the history, iconography, and socio-cultural significance of one particular film genre by means of a number of examples. The specific focus of the course varies from year to year. **NOTE:** Students can obtain credit for only *one* of FILM 3907 and ENGL 3907.

FILM3908   Zombies in Film (O)   3 ch (3C) [W]
(Cross-Listed: ENGL3908)

Zombie films make up one of the longest living sub-genres of horror though representations of zombies have evolved from exoticized monstrous figures from Haiti to cannibalistic brain eaters and eventually to infectious bodies carrying epidemics. This course explores the evolution of zombies from studio pictures starring Bela Lugosi to B-movies featuring fighting ninjas and murdering cheerleaders through to modern film zombies who look uncannily like the unconscious bored populace and/or become loving family pets. Zombies are never simply undead; they always reflect something about changing lives and fears. These films also permit us to explore the murky spaces between high and low culture, the history and development of horror films as a genre, and the aesthetics of fear. **NOTE:** Students can obtain credit for only *one* of FILM 3908 and ENGL 3908.

FILM3916   Canadian Film since 1967 (O)   3 ch (3C) [W]
(Cross-Listed: ENGL 3916)

Through the study of various representative Canadian filmmakers and prevalent genres, this course explores the roles that regionalism, commercialism, and independent filmmaking play in defining national ideas about Canadian cinema and film audiences. This course concurrently traces developments in Canadian film production, policy, funding, distribution, and use since the creation of Telefilm (formerly the CFDC) and how these funding and cultural policies have affected and responded to the central themes and issues facing Canadian filmmakers and audiences. **NOTE:** Students can obtain credit for only *one* of ENGL 3966, FILM 3916, and ENGL 3916.

FILM3917   National Cinemas (O)   3 ch (3C) [W]
(Cross-Listed: ENGL 3917)

The National Cinemas course explores significant historical periods, movements, styles, film theories, directors, and topics in the development of particular national and/or transnational cinemas. The specific focus of the course varies from year to year. **NOTE:** Students can obtain credit for only *one* of FILM 3917 and ENGL 3917.

FILM3918   The French New Wave (O)   3 ch (3C) [W]
(Cross-Listed: ENGL 3918)

One of the most exciting movements in cinema, the French New Wave radically altered film, influencing and informing new kinds of cinema around the world and changing how we talk about and study films. The films of filmmakers like François Truffaut, Claude Chabrol, and Jean-Luc Godard continue to inspire contemporary filmmakers and critics. Through watching and analyzing their first films, reading their writings in *Cahiers du Cinéma*, and exploring how film historians interpret this period now, we will attempt to understand the artistic, social, economic, and historical forces that shaped the film movement and filmmaking in the decades to follow. **NOTE:** Students can obtain credit for only *one* of FILM 3918 and ENGL 3918.

FILM3999   Editing and Post Production (A)   3 ch (3C/WS) (LE)
(Cross-Listed: MAAC 3999)

This course introduces students to the processes and technical aspects of video production. Topics include videography fundamentals, digital camera techniques, location sound recording, lighting for video, scriptwriting for documentary and dramatic productions, post-production picture editing and finishing. Various scriptwriting, shooting and editing exercises are done in a small group environment. Taught cooperatively with the New Brunswick Filmmakers' Co-op. **NOTE:** Students who already have credit for ENGL 3999 "Film and Video Production" cannot obtain credit for FILM 3999 "Editing and Post-Production" or for MAAC 3999.

FILM4000   Digital Film Production III   6 ch (6WS)
(Cross-Listed: MAAC 4000)

This full year course takes students through the entire process of production of a professional quality short film, from fundraising, budget planning, and pre-production work through the shoot to the final edit and on to the marketing and submission of the film to festivals. Students work together as a production team, taking on a variety of responsibilities while supervised by the instructor. *Prerequisite:* MAAC/FILM 2999 or permission of the instructor.

FILM4001   Advanced Production   3 ch (3C/WS) (LE)
(Cross-Listed: MAAC 4001)

Students produce more complex films, developing a project from beginning to end, working on each other's projects, and gaining hands-on experience in a variety of skilled positions on a film's crew. **NOTE:** Students can obtain credit for only *one* of FILM 4001 and MAAC 4001. *Prerequisite:* FILM 2999, MAAC 2999, or permission of the instructor.

FORESTRY

A minimum grade of C is required for prerequisite courses.
See beginning of Section H for abbreviations, course numbers and coding.

FOR1001   Introduction to Forestry   4 ch (3C 3L)

This course provides students with an overview of field forestry skills through collection and analysis of basic stand-level inventory data. Emphasis is on developing basic mensuration and computation skills through a series of laboratory exercises and solving practical problems. Students learn how to quantify stand structure and to use basic quantitative information to make forestry decisions.

FOR2006   Management of Natural Systems   4 ch (3C 3L)

Introduces management design issues and practices for a variety of natural systems so that students can effectively work across related disciplines. Objectives: (a) quantitatively design and evaluate strategies aimed at producing a desired set of outcomes for natural systems, including forests, wildlife populations, and hydrological networks; and b) communicate technical information clearly and succinctly in written format. *Prerequisite:* ENR 1001. *Co-requisite*: ENR 2004 or permission of the instructor.

FOR2113   Introduction to Wildlife and Aquatic Ecology   3 ch (3C)

Emphasizes interdependence of forest organisms and the terrestrial and aquatic components of their environment, especially in the context of industrial forestry. Introduces an ecological approach to impacts of harvesting on forest ecosystems and the major groups of wildlife inhabiting forests, including species at risk. Covers identification and habitat requirements of selected wildlife species, and applicable legislation.

FOR2205   Quantitative Methods (O)   3 ch (2C 3L)

Applications in collection, organization, and analysis of basic forestry, biological and other environment-related data. Emphasis on the use of statistics as a problem-solving and decision-making tool through basic numerical and visual statistical techniques, iterative computer graphics, and programming.

FOR2281   GIS with Applications in Forestry and   3 ch (2L)
Environmental Management

This course introduces students to core GIS terminology, tools and workflows using practical examples before proceeding to more advanced spatial analysis techniques. Material is presented in an online platform, with lab-based tutorial sessions and assumes no prior GIS knowledge.

FOR2416   Structure and Development of Woody Plants   3 ch (2C 3L)

Development of woody-plant structure from embryo to maturity. Topics include morphogenesis and basic anatomy, development of crown architecture, interrelationships between crown and stem development, wood and elements of wood quality, mechanisms of asexual and sexual reproduction. For each topic, differences among major genera will be considered. *Prerequisite:* FOR 2425.

FOR2425   Autecology of Forest Vegetation   5 ch (3C 3L)

Recognition and identification of species, environmental requirements, and persistence mechanisms of various life-forms of forest vegetation; interpretation of silvical characteristics of tree species; analysis of stands of trees in relation to general site conditions and relative stage of development; and evaluation of interrelationships among components of forest vegetation over time, including likely responses to perturbation or to interventions of various kinds. *Prerequisite:* A basic university course in Biology or Botany; *Co-requisite*: FOR 2435.

FOR2432   **Forestry Inventory and Growth**   **4 ch (3C 3L)**

This course focuses on the design and analysis of forest-level inventories. Concepts of stratification and multistage sampling are presented. Approaches to modelling and predicting stand growth and inventory updates are explored.

FOR2435   **Fundamentals of Forest Tree Physiology and   3 ch (2C 3L)
Genetics**

The course will deal with fundamentals of forest tree physiology and genetics, especially basic physiological processes and their genetic environmental control underlying growth, development, functioning, acclimation and adaptation of forest trees. The laboratory sessions will focus on reaffirming selected concepts and material taught in the class through practical experiments and demonstrations.

FOR2505   **Forest Soils: Formation and Properties   5 ch (3C 3L)**

Students examine relationships between soils and plants, and related roles of water and nutrients. Factors that restrict root growth, and processes that influence soil development are revealed through field exercises and laboratory work. Effects of natural and anthropogenic disturbances on forest soils and subsequent plant responses are emphasized.

FOR2703   **Forest Operations**   **3 ch (2C 3L)**

This course introduces the major tree harvesting concepts in eastern Canada to students. Emphasis is on the felling, off road transport, and processing functions. A variety of machine types and functions are introduced and students explore the relationship between productivity and equipment costing and how these activities impact unit cost over time.

FOR2803   **Wood Technology**   **3 ch (2C 3L)**

Molecular, cell wall and anatomical structure of wood. Relative density, dimensional changes and moisture effects. Measuring industrial wood products (for example pulpwood, sawlogs, chips, pulp and lumber). Wood biodeterioration.

FOR3000   **Business Management and Human Factors in   3 ch (3C)
the Forestry and Environmental Sectors**

This course provides students with basic skills and abilities needed to effectively manage the business and human aspects of environmental and forest management. Students will acquire basic abilities to budget and monitor projects, conduct financial analyses to evaluate management alternatives, evaluate financial statements, promote motivation, and facilitate effective communication and teamwork.

FOR3005   **Silviculture and Stand Intervention Design   5 ch (3C 6L)**

Takes a design-based approach to silviculture. Students develop stand intervention plans for the main stages of stand development integrating the biology of growing trees, engineering of conducting operations, and economics of costing operations.

FOR3006   **Forest Management**   **4 ch (3C 6L)**

Upon successful completion of this course, students will be able to design, evaluate, and explain management strategies for forest management problems of moderate complexity aimed at satisfying multiple social, economic, and environmental objectives. Students will employ forest estate analytical software and will prepare professional technical reports summarizing their analysis and results. *Prerequisites:* FOR 2006, FOR 3005, or permission of instructor.

FOR3101   **Forest Economics**   **3 ch (3C)**

This course applies economic tools to help make informed forestry decisions that will most effectively meet private and social goals. *Prerequisite:* Some experience with regression analysis.

FOR3303   **Photo-interpretation, Photogrammetry and   3 ch (3*L)
Remote Sensing in Forestry**

Provide interpretation of aerial photographs of forested areas for stand and site characterization. Remote sensing products other than aerial photographs, such as digital optical images, thermal infrared, and radar images will be introduced. Basics in digital image processing will be covered to address the conversion of remote sensing images to GIS layers. It is a self-paced, web-based course without scheduled lectures. UNB campus students do labs during scheduled sessions. Labs are self-paced and web-based for Open Access Learning Program students. Le cours est aussi disponible en français. **NOTE**: Students cannot receive credit for both FOR 3303 and FOR 3313.

FOR3445   **Ecology of Populations and Communities   4 ch (3C 3L)**

To understand and link processes acting on individuals, populations, and communities in space and time. To predict the response of individuals, populations, and communities to disturbance and to understand the implications of such responses for management of populations,

communities, and ecosystems. *Prerequisite:* FOR 2113 or permission of the instructor.

FOR3456   **Forest Watershed and Forest Fire Management 3 ch (2C 3L)**

Emphasizes the principles of management of watersheds and fire at the stand and landscape level. Influences of climate, topography/terrain, and stand and fuel types are covered. Concepts of watershed conservation are introduced as well as principles and models dealing with water retention and flow, and carbon and nutrient cycling in primary forest watersheds. Fire management concepts deal with the Fire Weather Index system, the Fire Behaviour Prediction system, fire ecology, and fire management strategies, tactics and operations. *Prerequisite:* FOR 3445 or permission of instructor.

FOR3885   **Non-Timber Forest Products**   **3 ch (3C)**

Provides an overview of the diversity of non-timber forest products (NTFPs) in Canada and North America. Introduces major classes of NTFPs including medicinal plants; maple and birch products; mushrooms, fiddleheads and other edible plants; and essential oils. Introduces the science behind the production and commercial use of selected NTFP examples. Discusses issues of stewardship, sustainability and certification of non-timber forest products, emphasizing management of forest lands for multiple products and values.

FOR4020   **Management Practicum**   **8 ch (1C 3L)**

Practical exercise in forest landscape management, designed to provide an opportunity to integrate skills and knowledge gained throughout the program. Working with a client and/or the public, students will develop goals and objectives, design and gather inventory data (if required), then develop an integrated landscape management plan at the strategic, tactical and operational levels. Learning modules will be provided specific to the needs of the project. Additional topics include project management, conflict resolution, professional practice and forestry associations. The project requires completion of a group report and presentation. *Prerequisites:* FOR 2281, FOR 3005, FOR 3006, FOR 3456. *Co-requisite:* FOR 4096.

FOR4096   **Forest Landscape Design and Management   4 ch (3C 3L)**

Upon successful completion of this course, students will be able to design and evaluate strategic forest management strategies aimed at meeting a variety of environmental, social, and economic forest values. Strategy design will require students to combine skill in use of state-of-the-art forest estate planning systems with an understanding of natural disturbance dynamics, forest certification, and forest land zoning concepts. The course builds on student abilities acquired in prerequisites courses FOR 2006 and FOR 3006. *Prerequisites:* FOR 2006 and FOR 3006, or permission of instructor.

FOR4101   **Professional Internship in Forestry and   3 ch (3C) (LE) [W]
Environmental Management (Cross-Listed: ENR4101)**

Under the supervision of a senior manager with an industrial, government, environmental non-governmental organization (ENGO) or community agency, students will observe supervision, supervise others, get feedback, critically reflect on their experience by combining academic and experiential supervision knowledge, and present it in a written report and oral presentation. In addition to supervision, students will enhance their formal and informal critical and communication abilities. Enrollment is limited and students need to contact the Faculty's Student Services Coordinator before registering. Students cannot receive credit for both ENR 4101 and FOR 4101. *Prerequisite:* ENR 3002 or FOR 3000.

FOR4303   **Optical, Thermal Infrared and Radar   3 ch (3C/L)
Remote Sensing**

An introduction to remote sensing methodologies for observing the Earth's surface from different vantage points (from the ground, from airplanes, and from space). The course is fully web-based. It allows for a quantitative understanding of optical, thermal infrared, and radar images as acquired by Earth's observation satellites like LANDSAT-TM, SPOT-HRV, NOAA-AVHRR and RADARSAT. Remote sensing applications are taken from the fields of forestry, agriculture, geology, oceanography, hydrology, and environmental studies. It does not deal with photo-interpretation. The course is recommended for students intending to do a forestry senior thesis in remote sensing. Le cours est aussi disponible en français.

FOR4304   **Image Processing Methods for Radarsat-2 and   3 ch
Polarimetric Images**

Introduction to image processing methods for RADARSAT-2 images (with a particular reference to polarimetric images). The course is fully web-based. It allows the quantitative understanding of the nature of radar images and polarimetric images and how they can be processed to extract relevant information. It includes applications in forestry, agriculture, geology, oceanography, hydrology, and environmental studies. Le cours est aussi disponible en français.

FOR4425   **Conservation Genetics (A)**   3 ch (3C)

This class will examine the application of genetic principles, concepts and biotechnologies in conservation, sustainable management and restoration of natural and managed resources. The topics will include: concepts of genetic resources, genetic biodiversity and other population genetic parameters, demography, conservation, sustainable management, ecological restoration, and minimum viable population size; indicators for population viability; exploration, evaluation, utilization, and conservation of genetic resources; genetic consequences of habitat fragmentation, resource management practices, domestication, climate change, and natural disturbance; and challenges, opportunities and strategies for conservation and sustainable management of genetic resources. *Prerequisite:* BIOL 2053 or BIOL 2143 or permission of instructor.

FOR4545   **Biodiversity and Ecosystem Management**   4 ch (3C 3L)

To learn concepts and measurements about biophysical landscape dynamics, strategies for the maintenance of biodiversity, and ecosystem based forest management. To use contemporary examples of management of ecosystems. *Prerequisite:* Prior ecology course.

FOR4602   **Ecology of Forest Insects (A)**   3 ch (2C 3L)

Evaluates factors influencing insects in forest communities with emphasis on predator-prey, parasitoid-host and insect-plant interactions as well as natural selection, physiological constraints, behaviour and population dynamics.

FOR4615   **Insect Management**   3 ch (2C 3L)

Taxonomy, importance and ecology of major insect families; damage assessments, insect population dynamics and control strategies and tactics.

FOR4625   **Integrated Management of Insects and Fungi**   4 ch (3C 3L)

Presents a common approach to management of insects and fungi and their interactions at the stand/population and landscape levels. Major components to be discussed are: monitoring and prediction of hazard and risk; damage prediction based on organism population dynamics; management strategies and tactics including acquisition and deployment of resources, control methods and cost benefit analyses. Taxonomy of major families of insects and diseases will be covered in laboratory sessions. *Prerequisites:* FOR 3445, FOR 3455, and FOR 3006, or permission of instructor.

FOR4655   **Wildlife Investigational Techniques (A)**   3 ch (3C/L)

Designed to introduce techniques available for conducting investigations in support of management objectives. Labs will provide hands-on experience from radio telemetry to necropsy techniques. *Prerequisites:* Substantial completion of Year 3, BScF, or permission of instructor.

FOR4723   **Ornithology**   5 ch (3C 3L) [W]

Studies birds; natural selection, morphological adaptations, migration, behaviour, and reproduction, in an ecological way. *Prerequisites:* BIOL 2093, or BIOL 2063, 2068, or permission of the instructor. Credit may not be obtained for both FOR 4723 and BIOL 4723.

FOR4785   **Urban Forest Conservation and Management**   4 ch (3C 3L)

Examines the planning and management of trees and forests associated with urban areas with a focus on protection and enhancement. Includes tree/forest resource inventories, techniques to determine the values of urban residents concerning trees and forests, assessment of the benefits and procedures for urban watershed protection, and techniques to maintain or increase the health of trees and forests in urban green spaces.

FOR4881   **Kiln Drying and Preserving Wood**   3 ch (3C/L)

Kiln drying theory and practice. Experience operating a dry kiln. Preservative treatment and sap stain control processes and chemicals. Properties of treated wood.

FOR4910   **Directed Studies in Forestry**   6 ch

With approval of the Faculty, a student may carry on directed studies of specific problems or areas in forestry.

FOR4911   **Directed Studies in Forestry**   4 ch

With approval of the Faculty, a student may carry on directed studies of specific problems or areas in forestry.

FOR4912   **Directed Studies in Forestry**   3-5 ch

With approval of the Faculty, a student may carry on directed studies of specific problems or areas in forestry. Number of credit hours will be determined by the Faculty and based on the nature, duration, and complexity of the undertaking.

FOR4973   **Forestry Field Camp**   2 ch (6D)

An intensive 6-day series of field exercises, starting before the Fall Term, involving low student/faculty ratios, and designed to improve integrative and quantitative-forecasting skills. Evening sessions provide overviews of the scope of forest-ecosystem management generally, and in relation to the specific field-camp situation. Students are charged for food and lodging and part of travel costs. *Prerequisites:* Substantial completion of Years 1-3 core.

FOR4991   **Honours Research Project**   6 ch [W]

Forestry honours students must complete a research project that is approved by the Faculty and supervised by a Faculty member. This course involves submitting a detailed project report and an oral defense in a seminar-style presentation. Students should consult with a faculty advisor prior to the end of third year to discuss project requirements and potential topics. **NOTE**: Minimum CGPA for acceptance is 3.0

FOR4994   **Senior Technical Report**   3 ch

A technical description and analysis of a study, employment project, or literature review developed under the guidance of a faculty member. Available only to students in their fourth year or by permission of the instructor.

FOR5281   **Introduction to GIS for Forestry &**   3 ch
               Environmental Management

The course introduces GIS via the industry-standard ArcGIS Pro software and emphasizes learning GIS through applied environmental management scenarios; specifically, applications in land base inventory and mapping using data for the UNB Woodlot.
The introductory module provides basic GIS concepts and ArcGIS using generalize examples. The second (primary) learning module consists of two lessons; Environmental Asset Inventory and Environmental Asset Mapping. The Environmental Asset Inventory lesson introduces ArcGIS application in inventory, including creating and using geodatabases to store forest inventory, road & stream data and other managed assets. Students are exposed to the array of digital data typically found in forest inventories and transportation networks and how they are stored, accessed, displayed, and manipulated using GIS. The Environmental Asset Mapping lesson introduces the power of ArcGIS in composing maps commonly used in environmental management, including map layers, thematic maps, and application maps. The two lessons also expose you to basic geoprocessing techniques, data editing and updating and map overlay.

FOR5282   Advanced GIS for Forestry & Environmental Management   3 ch

The course teaches advanced GIS via the industry-standard ArcGIS Pro and emphasizes learning GIS through applied environmental management scenarios; specifically, applications in land base inventory and mapping using data for the UNB Woodlot.
The introductory module provides an accelerated refresher on core assumed GIS knowledge. The second (primary) learning module consists of three lessons; Forest Inventory Analysis, Landscape Analysis, and Non-Timber Forest Values. The lessons are not presented as an exhaustive treatment of their topics, but simply ones that present some obvious applications in forestry, in logical groupings. Forest Inventory Analysis introduces forest reclassifying and characterizing concepts and broadly applicable geoprocessing methods. Landscape Analysis and Non-Timber Forest Values, on the other hand, are theme-based lessons that employ the array of spatial analysis techniques introduced in Forest Inventory Analysis. *Prerequisite*: FOR 2281 or FOR 5281 or permission of the instructor.

FOR5284   **LiDAR for Forestry and Environmental Management**   3 ch

This course provides an introduction to LiDAR technology, including sensor types, platforms and acquisition parameters before springing in to the use of airborne laser scanning (ALS) data for environmental management and planning. Students will use ArcGIS and LAStools software to explore 3D point cloud data and generate useful derivative surfaces and analysis workflows including point cloud measurement & reclassification, DEM and DSM creation, point cloud stratification for landscape modelling and habitat suitability, trail planning, flooding potential, etc. *Prerequisite*: FOR 2281 or FOR 5281 or permission of the instructor.

FOR5801   **Structural Performance of Engineered**   3 ch (2C 3L)
               Wood Products

Wood and engineered wood products have been widely used for construction. Understand the principles and codes relating to the structural design in timber, determine the major mechanical properties of full size engineered wood products such as bending and shear capacities, derive the design value of dimension lumber, and design structural elements (such as beams and columns), and lateral load carrying systems (such as shear walls). *Prerequisite*: FOR 2803, ME 2111.

FOR5811   **Manufacturing of Wood Products**   3 ch (2C 3L)

Wood is a natural bio-composite material, which can be processed to make primary products (such as lumber) and secondary products (such as traditional wood-based composite panels and modern structural composite panels). Emphasis is given on the manufacturing processes and applications of these secondary products, and introduction to the modern manufacturing technologies such as computer numerical control (CNC) and 3D printing. *Prerequisite*: FOR 2803, or permission of the instructor.

FOR5920   **Forestry in Atlantic Canada (A)**   2 ch (3C)

This course is designed for students new to Atlantic Canada. The course provides an overview of forest history, plant distribution, forest utilization, forest conservation, and current forest management issues in Atlantic Canada. Guest lectures, small group discussions, and field tours will be used. *Prerequisite*: This course is reserved for 3+1+1 forestry students, or by permission of instructor.

FOR5983   **International Forest Studies**   3 ch

This course focuses on the biophysical, historical, social and economic factors influencing forest management in a region outside of Canada. The purpose of the course is to better understand forest management practices within the Canadian context by gaining an understanding of how these factors influence forest management in a region outside of Canada. A 10 to 14-day field trip to the region is required. Prominent forestry professionals from across Canada will join with the students. Each year a new region is selected. Students will be charged for travel costs associated with this course. Limited enrolment.

FRENCH

Students taking a French course at UNB for the first time must consult the Department of French. Please see "General Information" in Section G - FRENCH of this Calendar.

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

FR1014   **Français Fondamental I**   3 cr (3C)

Développement des habiletés langagières axé sur l'emploi du vocabulaire et la construction des phrases. Exercices oraux et écrits. Destiné aux étudiant(e)s n'ayant pas suivi un cours de français cadre après la dixième année.

FR1014   **Basic French I**   3 ch (3C)

Development of language skills, use of vocabulary and sentence structure. Speaking and writing practice. For students who have not taken French beyond grade 10 (Core). **NOTE:** Not open to students educated in French, students who have participated in in immersion programs, and students who have completed grade 12 (Core) French. May not be taken for credit by students who have successfully completed any other courses offered by the Department of French.

FR1015   **Français fondamental II**   3 cr (3C)

Suite du FR 1014. Destiné aux étudiant(e)s n'ayant pas suivi un cours de français cadre après la dixième année. *Prérequis*: FR 1014.

FR1015   **Basic French II**   3 ch (3C)

Continuation of FR 1014. Not open to students educated in French, students who have participated in immersion programs or students who have completed grade 12 (Core) French. **Note:** May not be taken for credit by students who have successfully completed any courses offered by the Department of French other than FR 1014. *Prerequisites:* FR 1014.

FR1034   **Communication orale et écrite I**   3 cr (3C)

Développement des habiletés d'écoute, d'expression orale ainsi que des stratégies de lecture et d'écriture. L'accent est placé sur la communication orale. Révision de la grammaire. Cours pour finissant(e)s du programme cadre. Fermé aux francophones et aux étudiant(e)s ayant participé à un programme d'immersion en milieu scolaire.

FR1034   **Oral and Written Communication I**   3 ch (3C)

Develops language proficiency in all four skills: listening, speaking, reading and writing. Emphasis is on oral communication. Review of selected grammatical points. Designed for students who have completed high school French. Not open to Francophones or to students who have participated in immersion programs in school. **NOTE:** May not be taken for credit by students who have successfully completed any courses by the Department of French other than FR 1014 or FR 1015.

FR1044   **Communication orale et écrite II**   3 cr (3C)

Approfondissement des notions grammaticales de base. *Prérequis*: FR 1034 ou l'équivalent.

FR1044   **Oral and Written Communication II**   3 ch (3C)

Emphasis on the reinforcement of basic grammatical concepts. **NOTE:** May not be taken for credit by students, who have successfully completed any courses offered by the Department of French other than FR 1014, FR 105, FR 1034. *Prerequisite:* FR1034 or equivalent.

FR1124   **Aspects du monde francophone**   3 cr (3C)

Exploration du monde francophone et de ses contextes culturels à travers une série d'exercices de lecture, d'écriture et de discussion. Travaux pratiques écrits. Réservé aux étudiant(e)s scolarisé(e)s en français.

FR1124   **Aspects of the Francophone World**   3 ch (3C)

Aims to explore the Francophone world and its cultural contexts through a series of oral and written exercises. Reserved for students educated in French. Francophone students and students educated in French take FR2154 when FR1124 is not offered.

FR1184   **Langue et littérature I**   3 cr (3C)

Révision de grammaire et examen de divers styles d'écriture visant l'apprentissage de méthodes efficaces de rédaction. Initiation à la littérature d'expression française et aux genres littéraires. Normalement réservé aux diplômé(e)s de programmes d'immersion.

FR1184   **Language and Literature I**   3 ch (3C)

Review of grammar and study of various writing styles for the learning of efficient writing techniques. Introduction to Literature in French and literary genres. **NOTE:** Normally for graduates of French Immersion. May not be taken for credit by students who have successfully completed FR 1124, FR 1194 or FR 2154.

FR1194   **Langue et littérature II**   3 cr (3C)

Suite du FR 1184. *Prérequis*: FR 1184.

FR1194   **Language and Literature II**   3 ch (3C)

Continuation of FR 1184. **NOTE:** May not be taken for credit by students who have successfully completed FR 1124 or FR 2154. *Prerequisites:* FR 1184.

FR2034   **Communication orale et écrite III**   3 cr (3C)

Développement des habiletés d'écoute et d'expression verbale spécifiques à la vie quotidienne et au monde du travail. Perfectionnement des stratégies de lecture et d'écriture. Révision de la grammaire. Enrichissement du vocabulaire. Fermé aux étudiant(e)s scolarisé(e)s en français et aux étudiant(e)s ayant participé à un programme d'immersion en milieu scolaire.

FR2034   **Oral and Written Communication III**   3 ch (3C)

Emphasizes the development of listening and speaking skills needed for social and work situations. Reinforcement of reading and writing strategies. Review of grammatical points. Vocabulary development and enrichment. **NOTE**: Not open to Francophones and graduates of French Immersion. May not be taken for credit by students who have successfully completed FR 1124, FR 1184, FR 1194, FR 2054 or FR 2154.

FR2054   **Communication orale et écrite IV**   3 cr (3C)

Approfondissement des notions grammaticales et des stratégies d'écriture. *Prérequis*: FR 2034 ou l'équivalent.

FR2054   **Oral and Written Communication IV**   3 ch (3C)

Emphasis on the reinforcement of grammatical concepts and the development of writing strategies. **NOTE:** May not be taken for credit by students who have successfully completed FR 1124, FR 1184, FR 1994, or FR 2154. *Prerequisites:* FR 2034 or equivalent.

FR2154   **Lecture et écriture**   3 cr (3C)

Analyse approfondie d'aspects grammaticaux et stylistiques; enrichissement du vocabulaire et sensibilisation aux registres; exercices de rédaction. *Prérequis*: FR 1194.

FR2154   **French Reading and Writing**   3 ch (3C)

Extensive analysis of grammatical and stylistic aspects of French; vocabulary enrichment and critical study of various language registers; writing practice. *Prerequisite:* FR 1194 or equivalent.

FR2164   **Initiation à la littérature française**   3 cr (3C)

Survol d'auteurs importants de la littérature française. Examen plus approfondi de textes choisis. Apprentissage de l'explication de texte et de la dissertation.

FR2164   **Introduction to French Literature**   3 ch (3C)

Survey of major authors in French literature. In-depth study of selected texts. Introduction to textual analysis and essay writing.

FR2174   Le français au XXIe siècle   3 cr (3C)

Description du français contemporain. Français standard et variantes régionales, mots et tournures à la mode, expressions idiomatiques. On abordera les principales difficultés du français.

FR2174   French in the 21st Century   3 ch (3C)

A description of contemporary French. Standard French and regional variants, trendy expressions, idiomatic expressions. Discussion of common difficulties of the French language

FR2184   Cultures francophones du Canada   3 cr (3C)

Étude multidisciplinaire des cultures d'expression française du Canada: histoire, politique, littérature, cinéma et actualité. Survol historique de la présence française en Amérique du nord. Considération du caractère distinct du Québec et des grandes régions minoritaires du Canada francophone (Acadie, Ontario, Ouest canadien). Réflexion sur les enjeux des droits linguistiques, du multiculturalisme et de la mondialisation. Destiné principalement aux diplômé(e)s des programmes d'immersion et aux étudiant(e)s scolarisé(e)s en français.

FR2184   Francophone Cultures of Canada   3 ch (3C)

Multidisciplinary study of the French-speaking cultures of Canada: history, politics, literature, cinema and recent events. Historical survey of French presence in North America. Consideration of the distinct character of Quebec and the important minority regions of francophone Canada (Acadie, Ontario, Western Canada). Reflection on the stakes of language rights, multiculturalism and globalization. Intended primarily for graduates of French immersion programs and for students schooled in French.

FR3034   Perfectionnement de l'expression orale I   3 cr (3C)

Développement de l'expression orale et de la compréhension de la langue parlée. Écoute d'enregistrements, notamment de bulletins radiophoniques d'information, et débats sur des sujets d'actualité. Fermé aux étudiant(e)s scolarisé(e)s en français et aux étudiant(e)s ayant participé à un programme d'immersion en milieu scolaire.

FR3034   Advanced Oral French I   3 ch (3C)

Develops oral expression by discussion of topical subjects and oral comprehension through recordings, including broadcasts. Not open to Francophones and, normally, not open to students who have participated in immersion programs in school.

FR3044   Grammaire et stylistique - niveau avancé   3 cr (3C)

Étude de structures grammaticales et de leurs applications stylistiques.

FR3044   Advanced Grammar and Stylistics   3 ch (3C)

Study of advanced grammatical structures and their stylistic applications.

FR3054   Rédaction I   3 cr (3C)

Fournit aux étudiant(e)s les outils permettant de s'exprimer par écrit dans un français correspondent à leur niveau.

FR3054   French Composition I   3 ch (3C)

Aims at giving students the tools to express themselves in written French at a level appropriate to their standing.

FR3064   Français langue des affaires   3 cr (3C)

Principes de la communication et de la rédaction en milieu de travail. L'accent portera sur l'acquisition des termes et tournures de la langue du commerce, de la banque et des affaires. *Prérequis*: FR 2054 ou FR 2154.

FR3064   Business French   3 ch (3C)

Principles of communication and writing in the workplace. Emphasis is on the acquisition of terminology and language structures specific to commercial, banking and business contexts. *Prerequisite:* FR 2054 or FR 2154.

FR3074   Advanced French Reading (A)   3 ch (3C)

This course helps students improve their reading skills in French through the study of literary and scholarly short texts.

FR3074   Lecture avancée du français (A)   3 cr (3C)

Ce cours aide les étudiants à accroître leurs aptitudes à la lecture en français à travers l'étude de courts textes littéraires et savants.

FR3204   Stylistique comparée (français/anglais)   3 cr (3C)

Mise en opposition et analyse de divers aspects de chaque langue. Dégager les problèmes précis que pose la transposition du français en anglais et vice versa. Éléments de théorie de la traduction.

FR3204   Comparative Structure   3 ch (3C)

Contrastive study of the principal grammatical structures of English and French emphasizing the differences in structure which exist even though the same concepts are being expressed.

FR3524   Roman et cinema   3 cr (3C)

Étude d'oeuvres françaises et québécoises, de leurs adaptations cinématographiques et des problèmes posés par le passage du langage littéraire à celui du cinéma.

FR3524   The Novel and Film   3 ch (3C)

Comparative study of selected French and French-Canadian novels, and their adaptation in film. Study of problems arising from the passage from literary language to that of the screen.

FR3534   Écrits de femmes   3 cr (3C)

Survol de la littérature féminine contemporaine acadienne, québécoise, africaine et française. Approche: critique féministe. (Cf. cet annuaire sous Gender and Women's Studies.)

FR3534   Women's Writings   3 ch (3C)

Selected texts by Acadian, Québécois, African and French women authors, studied in the context of feminist issues in literary scholarship. (See Calendar entry under Gender and Women's Studies.)

FR3536   Histoire de la littérature des femmes en France   3 cr (3C)

Panorama historique de la littérature des femmes en France de Moyen Âge à nos jours. Étude d'auteures importantes, de Marie de France à Annie Ernaux.

FR3536   A History of Women's Writing in France   3 ch (3C)

A survey of women's writing in France from the Middle Ages to the present day. Study of major female authors, from Marie de France to Annie Ernaux.

FR3544   Swiss and Belgian Literature in French (A)   3 ch (3C)

Examines the diverse production of modern and contemporary Belgian and Swiss literature written in French. Belgian authors may include Georges Roden bach, Maurice Maeterlinck, Michel de Ghelderode, Georges Simenon and Amélie Nothomb. Swiss authors may include Jean-Jacques Rousseau, Isabelle de Charrière, Blaise Cendrars, Philippe Jacottet, Albert Cohen and Agota Kristof.

FR3544   Littérature belge et suisse (A)   3 cr (3C)

Cours qui examine la diversité de la production littéraire francophone moderne et contemporaine en Belgique et en Suisse. Auteurs belges: Georges Rodenbach, Maurice Maeterlinck, Michel de Ghelderode, Georges Simenon et Amélie Nothomb. Auteurs suisses: Jean-Jacques Rousseau, Isabelle de Charrière, Blaise Cendrars, Philippe Jacottet, Albert Cohen et Agota Kristof.

FR3554   Survol de la littérature noire d'expression française   3 cr (3C)

Vue d'ensemble d'oeuvres africaines et antillaises. Principaux axes de réflexion: le mouvement de la négritude, le colonialisme et la tentation du "masque blanc."

FR3554   Introduction to Black Literature Written in French   3 ch (3C)

Introduces students to the study of African and Caribbean works. Emphasis falls on the "négritude" movement, colonialism and the temptation of the "white mask."

FR3564   Folie et littérature   3 cr (3C)

Étude des rapports entre les auteurs, leurs oeuvres et la folie en littérature.

FR3564   Madness and Literature   3 ch (3C)

Study of the representation of madness in selected literary texts.

FR3574   Le roman populaire   3 cr (3C)

Étude de récits centrés sur l'intrigue et l'exploitation de codes narratifs propres à différents genres populaires, tels la science-fiction, la fantasy et les romans sentimental policier, terrifiant et pour le jeunesse**.**

FR3574   Popular Fiction   3 ch (3C)

A study of plot-driven fictional works written with the intent of fitting into specific literary genre, such as science-fiction, fantasy, romance, crime, horror, and young adult fiction.

FR3584   Auteurs non francophones écrivant en français   3 cr (3C)

L'émergence de l'Europe comme entité politique coïncide avec la parution remarquée d'ouvrages écrits en français par des non francophones. Nous tenterons une description sociologique, littéraire et formelle de ce

phénomène dont Agota Kristof (Hongrie), Milan Kundera (Tchéquie), André Makine (Russie) et Nancy Huston (Canada) constitueront les exemples à l'étude. Les étudiant(e)s qui ne font ni une concentration, ni une spécialisation en études françaises, peuvent remettre leurs travaux en anglais.

FR3584   Non Francophone Writers Writing in French   3 ch (3C)

The unification of Europe coincides with an increased number of works written in French by non Francophones. We will describe this recent phenomenon using sociological, literary and formalist approaches of works by Agota Kristof (Hungary), Milan Kundera (Czech Republic), André Makine (Russia), Nancy Huston (Canada). Classes to be held in French; students not registered in French Majors or Honours Program may submit their assignments in English.

FR3594   Paris en fête (O) (inscrit ailleurs sous WLCS 3594)   3 cr (3C)

Sujet d'inspiration des poètes et romanciers ou simple cadre de leurs œuvres, la ville de Paris occupe une place essentielle en littérature française. Les étudiants liront et étudieront des œuvres qui mettent en évidence Paris et la capitale régionale de Poitiers. Le cours comprendra des visites aux musées, aux résidence, aux cafés et aux sites culturels décrits dans les œuvres au programme. Le cours est normalement enseigné en France. NOTE : Le cours se donne en français. Les étudiants qui s'inscrivent à WLCS 3594 peuvent choisir de lire les œuvres en traduction et remettre leurs travaux en anglais.

FR3594   Paris in Literature (O) (Cross-Listed: WLCS 3594)   3 ch (3C)

Paris has played a key role in French literature. The city has inspired numerous poets and novelists and it has been described by countless others. Students will read and study a number of works that highlight Paris and the regional capital of Poitiers. There will be visits to museums, residences, cafés and cultural sites where the authors lived and wrote, and where their novels take place. Normally taught on location in France. NOTE: Classes will be conducted in French. Students who choose to read the novels in translation and submit their assignments in English must register for WLCS 3594.

FR3624   Littérature française de la Renaissance à l'Âge classique   3 cr (3C)

Survol des mouvements littéraires ayant marqué le XVIe et le XVIIe siècle français; étude d'auteurs représentatifs de diverses pratiques littéraires telles que le roman (La Fayette), l'essai (Montaigne), le théâtre (Racine), la poésie (Ronsard).

FR3624   French Literature from Renaissance to Classicism   3 ch (3C)

Survey of major literary movements in the 16th and 17th centuries in France; study of writers representing various literary genres: novel (La Fayette), essay (Montaigne), drama (Racine), poetry (Ronsard).

FR3634   Littérature française des Lumières   3 cr (3C)

Survol de l'évolution des idées et de la philosophie au XVIIIe siècle en France; étude de textes représentatifs de diverses pratiques littéraires telles que l'autobiographie (Rousseau), le roman (Graffigny, Diderot), l'essai (Voltaire).

FR3634   French Literature in the Enlightenment   3 ch (3C)

Survey of the evolution of thought and philosophy in 18th Century France; study of texts representing various literary genres such as autobiography (Rousseau), novel (Graffigny, Diderot), essay (Voltaire).

FR3654   Littérature française 1800-1850   3 cr (3C)

Aspects du romantisme français, marqué par une conscience nouvelle du rôle de l'artiste, et par le triomphe du roman (Constant, Balzac, Gauthier, Stendhal) et de la poésie lyrique (Hugo, Nerval, Lamartine).

FR3654   French Literature 1800-1850   3 ch (3C)

Aspects of French Romanticism, marked by a new awareness of the role of the artist and the triumph of the novel (Constant, Balzac, Gautier, Stendhal) and of lyrical poetry (Hugo, Nerval, Lamartine).

FR3664   Littérature française 1850-1900   3 cr (3C)

Le réalisme, le naturalisme, l'art pour l'art, le décadentisme, découlant tous du romantisme, tentent de situer l'individu face au progrès. Étude des textes de Flaubert et Zola, Sand et Maupassant, Baudelaire, Verlaine et Mallarmé.

FR3664   French Literature 1850-1900   3 ch (3C)

Realism, naturalism, l'Art pour l'Art, the Decadents: these literary movements are all rooted in Romanticism and attempt to answer the questions haunting the individual in an increasingly technological world. Works by Flaubert and Zola, Maupassant and Sand, Baudelaire, Verlaine and Mallarmé will be analyzed.

FR3665   Littérature française 1900-1950   3 cr (3C)

Dada, surréalisme, existentialisme, théâtre de l'absurde… Étude d'un demi-siècle marqué par deux guerres mondiales et une conjoncture de crise permanente. Panorama critique de la vie littéraire qui se concentre aussi sur les principaux enjeux du contexte social et idéologique du temps (essor de tendances radicales, rupture avec l'ordre traditionnel, appel à l'engagement de l'intellectuel). Vise à habiliter les étudiant(e)s à la lecture et à l'analyse des oeuvres d'auteur(e)s importants tels Artaud, Breton, Camus, Cocteau, Gide, Giraudoux, Sartre et Yourcenar.

FR3665   French Literature 1900-1950   3 ch (3C)

Dada, Surrealism, Existentialism, Theatre of the Absurd… Study of the first half of a century shaped by two World Wars and a climate of ongoing crisis. Literary survey that also focuses on the social and ideological context (growth in radical tendencies, break from traditional structures, public involvement of the intellectual). Aims to provide students with analytical tools for the study of works by major authors such as Artaud, Breton, Camus, Cocteau, Gide, Giraudoux, Sartre and Yourcenar.

FR3674   Le roman français a contemporain   3 cr (3C)

Une lecture attentive de quelques romans représentatifs du debut du 21e siecle. Les courants intellectuels, les préoccupations esthétiques, politiques, sociales et morales qui se dégagent de ces oeuvres seront abordées.

FR3674   The Contemporary French Novel   3 ch (3C)

Examines selected novels from the beginning of the twenty-first century. Explores intellectual contexts of the novels, as well as, the aesthetic, political, social and moral concerns outlined in them.

FR3675   Le roman en France des origines a nos jours   3 cr (O) (3C)

Étude de l'évolution du roman en France du Moyen Age au XXIe siecle, incluant le roman de chevaliers, le roman epistolaire, le roman realiste et naturaliste et le Nouveau Roman.

FR3675   The Novel in France from its Origin to the Present Day   3 ch (O) (3C)

Study of evolution of the French novel from the Middle Ages to the twenty-first century, including chivalric romance, epistolary novels, Realist and Naturalist novels, and Nouveau Roman.

FR3684   Théâtre français   3 cr (3C)

Du marivaudage à l'absurde, de la satire au burlesque, le théâtre se révèle un art de l'interpellation. Étude des formes dramatiques dans des pièces de Molière, Marivaux, Beaumarchais, Rostand, Ionesco.

FR3684   French Theatre   3 ch (3C)

From "marivaudage" to the absurd world of Ionesco, from satire to burlesque, French drama showcases an art of interpellation. Technical aspects of dramaturgy will be analyzed in plays by Molière, Marivaux, Beaumarchais, Rostand and Ionesco.

FR3694   Litterature francaise de 1950 a 2000 (O)   3 cr (3C)

Le Nouveau Roman, le théâtre de l'absurde, les Hussards, l'Oulipo, le féminisme, le postmodernisme, l'autofiction. Étude d'un demi-siècle marqué par la mise à mal de la littérature engagée, par de grandes mutations sociales et de multiples secousses politiques.

FR3694   French Literature (O)   3 ch (3C)

The Nouveau Roman, Theatre of Absurd, the Hussards, Oulipo, feminism, postmodernism, autofiction. A study of the second half of a century marked by the undermining of literature engage ("committed literature"), by major social changes and multiple political upheavals.

FR3814   Poésie du Canada français   3 cr (3C)

Étude des courants poétiques les plus marquants du Canada français: symbolisme, régionalisme, surréalisme, nationalisme, contre-culture, formalisme et féminisme. Analyse du langage poétique, de la versification et des figures de style.

FR3814   Poetry of Canada   3 ch (3C)

Important poetic movements of French Canada: symbolism, regionalism, surrealism, nationalism, counter-culture, formalism, and feminism. Study of the language of poetry, versification, and figures of speech.

FR3824   Littérature de la Renaissance acadienne (O)   3 cr (3C)

Étude des éléments historiques, culturels et littéraires de la Renaissance acadienne à partir de la traduction d'Évangéline par Pamphile LeMay en 1870 jusqu'à la poésie de Napoléon Landry en 1955. Des extraits de

romans, de pièces de théâtre et de poésie de l'époque nationaliste seront analysés sous une perspective idéologique et mythanalytique.

FR3824   Literature of the Acadian Renaissance (O)   3 ch (3C)

A study of historical, cultural and literary elements of the Acadian Renaissance from the translation of Evangeline by Pamphile LeMay in 1870 to the poetry of Napoleon Landry in 1955. Excerpts of novels, plays and poetry from the nationalist period will be analyzed through an ideological and mythanalytical lens.

FR3834   Écrivaines québécoises contemporaines   3 cr (3C)

L'analyse de l'évolution de la pensée féministe dans le roman féminin québécois. (Cf. Cet annuaire sous Gender and Women's Studies).

FR3834   Contemporary Quebecois Women Writers   3 ch (3C)

Studies the evolution of feminist thought in novels written by Québécois women. (See Calendar entry under Gender and Women's Studies).

FR3844   Écriture migrante au Québec   3 cr (3C)

Depuis les années 1980, un flux migratoire dans les centres urbains du Québec donne lieu à une littérature dite transculturelle ou migrante. Axes de réflexion: exil, rêve du retour, identité et acculturation. Étude des enjeux de l'écriture et de ses modes d'expression romanesque, poétique et dramatique en milieu minoritaire.

FR3844   Immigrant Writing in Quebec   3 ch (3C)

Since the 1980s, a rise in immigration in the urban centres of Quebec has led to the development of transcultural or immigrant literature. Main focus on exile, fantasy of return, identity and acculturation. Study of issues of writing and its various forms, including fiction, poetry and drama, in a minority setting.

FR3854   Littérature acadienne   3 cr (3C)

Introduction à la littérature acadienne dans ses diverses manifestations. Une attention particulière sera portée aux textes contemporains. Principaux axes de réflexion: quête d'identité, débuts de modernité.

FR3854   Acadian Literature   3 ch (3C)

Introduction to Acadian literature in its diverse aspects. Special attention will be paid to contemporary works. Concentration on search for identity, beginnings of modernism.

FR3864   La littérature canadienne-française du XIXe siècle   3 cr (3C)

À partir de quelques oeuvres représentatives, la formation d'une écriture romanesque et poétique, spécifique au Canada français; son évolution de la rébellion de 1837 jusqu'à la fin du XIXe siècle, ses qualités et ses défauts. Étude de l'influence prédominant du contexte socio-culturel: lutte entre rouges et ultramontains, thèse du messianisme compensateur, censure et autocensure.

FR3864   French Canadian Literature of the XIX Century   3 ch (3C)

Based on certain representative works, study of the birth of a specific and distinct style of writing in the poetry and novel of French Canada, its evolution from the rebellion of 1837 to the end of the XIX century, its qualities and shortcomings. Study of the predominant influence of the socio-cultural context: the struggle between the Tories and the "ultramontains," the thesis of compensating messianism, censorship and self-censorship.

FR3874   Le roman canadien-français de 1900 à 1960   3 cr (3C)

Pendant la première moitié du XXe siècle se propage au Canada français une idéologie qu'appuie l'élite au pouvoir et qui lie à la survie du peuple canadien-français, à la religion et à l'agriculture. En littérature, plusieurs écrivains épousent cette idéologie. Ils célèbrent la patrie de même que les séductions de la campagne québécoise: terre, clocher, etc. Étude de l'évolution de cette littérature qui se voulait représentative du mode de vie et des idéaux canadiens-français.

FR3874   The French-Canadian Novel from 1900-1960   3 ch (3C)

The first half of the twentieth century bears witness to an ever popular ideology favoured by those in power, linking the survival of the French Canadian people with religion and agriculture. In literature, many writers promote this ideology. They celebrate the qualities of the Québec countryside, the soil, the Church, the homeland. Looks at the evolution of this literature which saw itself as representing the lifestyle and ideals of French Canadians.

FR3884   Théâtre du Canada français   3 cr (3C)

Lecture de grandes oeuvres dramatiques du Canada français. Étude de la dramaturgie, de la mise en scène et de la théâtralité.

FR3884   The Theatre of French Canada   3 ch (3C)

Reading of major works by French Canadian playwrights. Study of dramaturgy, production, and theatricality.

FR3894   Le roman canadien-français contemporain   3 cr (3C)

Le roman canadien-français depuis 1960 est marqué par l'urbanisation, la contestation et l'éclatement des valeurs traditionnelles. Étude des oeuvres représentatives de ce refus global du passé et de cette quête d'un prochain épisode libérateur tant du point de vue politique que de celui de l'illustration d'une nouvelle forme laïcisée du mythe national ancré dans la modernité et l'espace américain.

FR3894   The Contemporary French-Canadian Novel   3 ch (3C)

Since 1960, the French Canadian novel has been marked by a thrust towards urbanization, by the rejection and disintegration of traditional values, and by the search for a new freedom. Representative works of this era will be studied both from a political point of view and as illustrating a new type of national, secular myth anchored in modernism and the North American continent.

FR4034   Perfectionnement de l'expression orale II   3 cr (3C)

Amélioration de l'expression orale. Présentations, discussions et débats sur des sujets d'actualité. Fermé aux étudiant(e)s scolarisé(e)s en français.

FR4034   Advanced Oral French II   3 ch (3C)

Aims at perfecting competence in oral French through presentations, discussions, debates on current topics. Not open to students who attended French-language school.

FR4054   Rédaction II   3 cr (3C)

Amélioration de l'expression écrite. Rédaction de textes suivis.

FR4054   French Composition II   3 ch (3C)

Aims at developing competence in writing structured full-length texts.

FR4504   Étude d'un auteur important   3 cr (3C)

Exploration de l'univers littéraire d'un auteur important de la francophonie.

FR4504   Study of a French Major   3 ch (3C)

Study of the works of a major literary author of the French speaking world.

FR4524   Cinéma québécois (A)   3 cr (3C)

Survol historique et esthétique du cinéma québécois. Exploration des traits majeurs de l'imaginaire filmique québécois. Analyse de la présence, depuis la Révolution tranquille, de deux trames narratives principales liées à la question identitaire: la tragédie et l'émancipation.

FR4524   Quebecois Film (A)   3 ch (3C)

Historical and aesthetic survey of Québécois film. Exploration of the major characteristics of the Québécois cinematic imagination. Analysis of the presence, since the Quiet Revolution, of two major narrative frameworks linked to the question of identity: tragedy and emancipation.

FR4534   Cinéma français (A)   3 ch

Cours qui explore l'histoire et l'évolution du cinéma en France, du cinéma muet ou surréaliste jusqu'aux plus jeunes générations de cinéastes français.

FR4534   French Cinema (A)   3 ch

Explores the history and the development of the French cinema, from the early silent or the Surrealist film to the youngest generations in French filmmakers.

FR4564   Alterite dans les litteratures francophones de   3 cr (O) (3C)   l'Afrique et des Caraibes

Découverte des littératures de l'Afrique et des Caraïbes à travers une réflexion sur l'altérité. Qu'est-ce que l'Autre? Le regard? L'exotisme? Comment la question de l'altérité nous permet-elle de réanalyser les textes francophones traitant de la colonisation, de l'esclavage, du racisme et du génocide? Étude de textes issus de la Martinique, d'Haïti, de la Côte d'Ivoire et de l'Algérie, ainsi que d'une variété de genres littéraires, dont l'essai, la poésie, le roman et le récit de voyage.

FR4554   Otherness in Francophone Literatures from Africa   3 ch (3C)   and the Caribbean

Discover the African and Caribbean literary traditions through a reflection on "Otherness". What is the Other? The gaze? Exoticism? How does the question of Otherness allow us to re-analyze francophone texts treating of colonization, slavery, racism and genocide? Study of various literary genres, including a selection of essays, poems, novels and travel journals written by authors from Martinique, Haiti, Algeria and the Ivory Coast.

FR4574   Lecture dirigée en littérature française/   3 ch (3C) [W]
Directed Reading in French Literature

Étude attentive d'un sujet particulier en littérature française. Sous la supervision d'un membre régulier ou associé du département, l'étudiant devra réaliser des travaux de lecture dirigée et de production écrite. *Prérequis*: l'autorisation du professeur et du département.
A detailed study of a specific topic in French studies. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings and written assignments. *Prerequisites:* permission of the instructor and the Department.

FR4824   Littérature acadienne au 21e siècle/   3 ch (3C) [W]
Acadian Literature in the 21st Century

Étude de la littérature acadienne du nouveau millénaire (depuis 2000), un intérêt particulier étant porté à la langue d'expression et aux thèmes traités des auteurs tels que France Daigle, Rose Després, Herménégilde Chiasson, Jean Babineau et Georgette LeBlanc.
Study of Acadian literature in the new millenium (since 2000), with particular focus on the language of expression and main themes in the works of authors such as France Daigle, Rose Després, Herménégilde Chiasson, Jean Babineau and Georgette LeBlanc.

FR4900   Mémoire de specialization   6 cr (R)

Travail sous la direction d'un(e) professeur(e) du Département. Réservé aux étudiant(e)s faisant une 'Spécialisation simple.'

FR4900   Honours Report   6 ch (R)

Individual study, under the supervision of a member of the Department, leading to a report. Reserved for Single Honours students.

FR/LING3404   Introduction à la linguistique   3 cr (3C)

Étude d'aspects phonologiques, morphologiques et syntaxiques, à partir d'exemples tirés du français.

FR/LING3404   Introduction to Linguistics   3 ch (3C)

Introduction to various sub-disciplines of linguistics (phonology, morphology, and syntax) exemplified through French.

FR/LING3414   Sociolinguistique   3 cr (3C)

Initiation à l'étude empirique des interactions entre la langue française et son contexte social. Thèmes: variation sociale et stylistique, dialectes et norme, attitudes linguistiques, féminisation du discours, bilinguisme. *Prérequis*: FR/LING 3404 ou l'équivalent; FR/LING 3414 et FR/LING 3404 peuvent être suivis simultanément.

FR/LING3414   Sociolinguistics of French   3 ch (3C)

An introduction to the empirical study of language as it is used in its social context. Topics include: social and stylistic variation, dialects and the "standard," linguistic attitudes, language and gender, bilingualism. *Prerequisite:* FR/LING 3404 or equivalent; FR/LING 3414 may be taken concurrently with FR/LING 3404.

FR/LING3424   Phonétique et phonologie   3 cr (3C)

Étude des concepts fondamentaux de la phonétique et de la phonologie. Description des propriétés phonologiques du français contemporain et de leurs diverses réalisations phonétiques. Étude des variantes régionales et sociales. *Prérequis*: FR 3404.

FR/LING3424   Phonetics and Phonology of French   3 ch (3C)

The concepts and methods of phonetics and phonology. The basic French sound system and its various phonetic realizations depending on dialects and sociolects. *Prerequisite:* FR 3404.

FR/LING3444   La créativité lexicale   3 cr (3C)

Le vocabulaire est un système dynamique, capable de se modifier pour répondre aux besoins de la société. Ce cours consiste en l'étude et l'analyse de la structure du lexique, des mécanismes créateurs de la langue et des divers moyens de formation des mots, y compris la dérivation, la néologie, l'emprunt et la métaphore. *Prérequis*: FR/LING 3404

FR/LING3444   Lexical Creativity   3 ch (3C)

The vocabulary of a language is a dynamic system constantly evolving to meet the changing needs of society. This course consists of the study and analysis of the structure of the lexicon, the creative mechanisms of language, and the various types of word formations, including derivation, neology, loanwords and metaphors. *Prerequisite:* FR/LING 3404.

FR/LING3454   Histoire de la langue française   3 cr (3C)

Étude de l'évolution du français depuis ses origines latines jusqu'à nos jours. Esquisse diachronique: phonologie, morphologie, syntaxe et vocabulaire de l'ancien français, du français classique et du français moderne. *Prérequis*: FR/LING 3404.

FR/LING3454   History of French   3 ch (3C)

A study of the evolution of French from its roots in Latin to the present. Old, Middle and Modern French will be sketched: the phonology, morphology, syntax and vocabulary of each period will be studied. *Prerequisite:* FR/LING 3404.

FR/LING3464   Syntaxe   3 cr (3C)

Étude de la structure phrastique dans le cadre de la grammaire générative. Présentation de phénomènes typiques du français, illustrant quelques règles syntagmatiques et transformationnelles. *Prérequis*: FR/LING 3404.

FR/LING3464   Syntax   3 ch (3C)

A study of sentence structure in the framework of generative grammar. Phrase structure and transformational rules will be studied and some classical problems of French syntax will be presented. *Prerequisite:* FR/LING 3404.

FR/LING3494   Mythes et réalités sur le langage   3 cr (3C)

Discussion de mythes répandus sur le langage visant l'étude de questions d'intérêt général. Thèmes abordés: acquisition du langage et apprentissage de langues, langage et pensée, origine des langues, enfants sauvages, communication animale, dégradation qualitative des langues, réformes orthographiques, codes signés, langues primitives, complexité grammaticale, sabirs et créoles, argots et jargons, langage artificiel. *Prérequis*: FR/LING 3404 ou l'équivalent; FR/LING 3494 et FR/LING 3404 peuvent être suivis simultanément.

FR/LING3494   Myths and Realities about Language   3 ch (3C)

Discussion of widespread myths about language, aiming to shed light on questions of general interest. Topics include: language acquisition and language learning, language and thought, origin of languages, feral children, communication among animals, deterioration of language quality, orthographic reforms, sign languages, primitive languages, grammatical complexity, pidgins and creoles, slang and jargons, artificial language. *Co-requisite*: FR/LING 3404 or equivalent; FR/LING 3494 may be taken concurrently with FR/LING 3404. The language of instruction is in French. Students enrolled in the Linguistics Program may write their papers in English.

FR/LING4414   Français canadien   3 cr (3C)

Examen de traits caractéristiques du français parlé au Canada, notamment du franco-acadien et du franco-québécois. *Prérequis*: deux cours FR/LING

FR/LING4414   Canadian French   3 ch (3C)

Examines the major linguistic features of French spoken in Canada, in particular Acadian and Québécois French. *Prerequisite:* Two courses in FR/LING.

FR/LING4444   Sémantique   3 cr (3C)

Initiation à l'étude de la signification et de la référence. Survol historique du domaine, sa place au sein de la linguistique générale et parmi d'autres sciences humaines; notions essentielles à l'examen des relations de sens; analyse componentielle. *Prérequis*: FR/LING 3404.

FR/LING4444   Semantics   3 ch (3C)

An introduction to the study of meaning and reference. Historical survey of the field, and its place within general linguistics and amongst other fields of human sciences; fundamental notions for the examination of meaning relations; componential analysis. *Prerequisite:* FR/LING 3404.

FR/LING4464   Théorie linguistique   3 cr (3C)

Mise en place de concepts fondamentaux en linguistique moderne. Étude de la relation entre forme et sens, de la nature des représentations grammaticales et de leur pertinence. *Prérequis*: FR/LING 3404.

FR/LING4464   Linguistic Theory   3 ch (3C)

Presents fundamental concepts in modern linguistics. Examines the relation between form and meaning, the nature of grammatical representations, and their relevance. *Prerequisite:* FR/LING 3404.

GENDER AND WOMEN'S STUDIES
Required Courses

GWS1003   Introduction to Gender and Women's Studies I   3 ch [W]

This general interest course provides an introduction to the study of gender and women's equality and examines how current social, political, and economic realities intersect to structure gender relations. Topics may include gender, gender as a spectrum, gender-based and diversity

analysis, gendered violence, feminism, hegemonic masculinity, missing and murdered Indigenous women, patriarchy, pay equity, rape culture, sexism, sexual assault, sexualities, stereotyping, the third wave women's movement, trans issues, unpaid work, the wage gap, women in politics, and work-life balance.

GWS2003   Introduction to Gender and Women's Studies II   3 ch [W]

This entry-level course, which is recommended for both first-and second-year students, explores the study of gender and women's equality issues with particular focus on women's activism from the 19th century to the present. It also examines the diverse theoretical approaches within feminist scholarship to outline broad terms of debate, and investigates specific feminist arguments in regard to written and visual representations and explores various socio-political issues. Topics covered will be viewed through multiple lenses (race, class, gender, sexual orientation) with a primary focus on sexual and reproductive health, paid and unpaid labour, political institutions and the status of women, the wage gap and female poverty, violence and family relations.

GWS4004   Seminar in Gender and Women's Studies   3 ch [W]

Critically examines the assumptions underlying existing disciplines as they relate to the study of women and men, and explores new theoretical and methodological perspectives for studying the gender-based aspects of society. *Prerequisites:* GWS1003 or GWS 2003.

GWS4900   Honours Thesis in Gender and Women's Studies   6 ch

Involves directed reading and research leading to an Honours thesis on a topic in Gender and Women's Studies. Students will consult with the Coordinator in finding a suitable topic and thesis supervisor. *Prerequisites:* Either GWS 1003 or GWS 2003 and GWS 4004.

GEODESY AND GEOMATICS ENGINEERING

The courses presently offered in the Geomatics Engineering Program by the Department of Geodesy and Geomatics Engineering are described below.
The first digit of the identification number indicates the level of the course. A "5" indicates an elective course, normally done in the final year.
The second digit normally indicates the subject area as follows:
0 measurement, positioning and navigation
1 applied analysis
2 geodesy
3 imaging and mapping
4 information management, modelling and visualization
5 land administration
6 synthesis and design
7 technical communication, complementary studies
8 service course for other disciplines
9 general (geodesy or geomatics or both)
The third digit carries the course sequence identification integer where "0" refers to the first course, "1" to the second course, and so on.
See beginning of Section H for abbreviations, course numbers and coding.
As stated below, a course may have prerequisite courses or *Co-requisites* courses or both. It is expected that students will have completed at least the prerequisite courses prior to doing a course in order to be adequately prepared to deal with the material of that course. Those who have not completed those courses can expect to spend additional time acquiring this background knowledge on their own and should budget more time for that course. Nonetheless, a course instructor has the right to insist that students may take her/his course only if they have met the prerequisite or *Co-requisites* stipulations or both.
The credit hour weighting of a course is also an indication of the amount of time that may have to be spent on a course. Generally, the number of hours per week (including all scheduled class time) could be from 2 to 3 times the number of credit hours. As an example, a course is shown as being "(2C, 3L) 4 ch". This means that a student might spend up to 8 to 12 hours per week, including the scheduled 5 hours of lectures (C) and lab (L). Students who have not completed the *Prerequisites* can expect to spend more time than this.
For list of core courses and technical elective courses, see Section G.
NOTE: See beginning of Section H for abbreviations, course numbers and coding.

GGE1001   Introduction to Geodesy and Geomatics   5 ch (3C 3L)

Introductory to geodesy and geomatics. Plane surveying techniques. Creation of topographic plans from electronic total stations using CAD software. Non ground-based positioning methods including LiDAR and GPS. Remote sensing imagery. Introductory uncertainty & estimation theory. Applications of Geographic Information Systems. Answering spatial questions using ESRI software.

GGE2012   Advanced Surveying   4 ch (2C 3L)

Barometric and trigonometric heighting. Precise levelling. Mechanical distance measurements. Electronic angle and distance measurement,

total stations, and reflectorless EDM. Coordinate transformations and positioning by trigonometric sections. Route and construction surveys. Geodetic control surveys: from triangulation to GPS. Digital terrain models. Contouring. Practical use of GPS. Introduction to the design of surveys and specifications. Related issues of occupational health and safety. *Prerequisites:* GGE 1001, STAT 2593.

GGE2013   Advanced Surveying Practicum   4 ch

Two weeks of practical exercises following spring examinations. Management of occupational health safety issues. **NOTE:** Credit will not be given for both GGE 2013 and GGE 2014. *Prerequisites:* GGE 2012, STAT 2593.

GGE2014   Advanced Surveying Practicum (Off-campus)   4 ch

A series of practical surveying exercises completed remotely during summer term. Management of occupational health safety issues. **NOTE:** Credit will not be given for both GGE2013 and GGE2014. *Prerequisites:* GGE2012, STAT 2593.

GGE2413   Mapping Concepts and Technology   5 ch (3C 3L)

Introduction to computer-based systems and processes for creating, managing, analyzing and visualizing spatial information. Introduction to geographic information systems (GIS), spatial data structures and 2-dimensional spatial transformations. Comparative overview of alternative spatial data collection technologies. Systems-based approaches to desktop mapping, cartographic production and map analysis. Basic properties and applications of common map projections. *Prerequisites:* CS 1003 or CS 1073, MATH 1503 or equivalent introduction to matrices and systems of linear equations.

GGE2501   Land Administration   4 ch (3C 2L) [W]

Introduction to basic principles and current issues in land administration from Canadian and international perspectives. Covers views of land tenure, land management, land information management, reform of cadastral systems, and coastal zone management. Includes practical excersises reinforcing course topics while building communication and analytical skills.

GGE3022   Survey Design and Analysis   5 ch (3C 3L)

Develop a deep understanding of surveying observations and their errors and apply it in design of control surveys that efficiently meet client requirements. Students learn operational principles of instruments, behaviour and mitigation of observation errors, interpretation of specifications for surveys and design and analysis of control surveys. Angle, azimuth, distance, and height difference observables are covered. Issues of occupational health and safety in survey design will also be addressed. *Prerequisites:* GGE 2012, GGE 3122, GGE 3202 *Co-requisite*: GGE 4211.

GGE3023   Survey Design Practicum   4 ch

Apply principles of survey design and analysis to a control survey involving total station, differential levelling, and GNSS observations. Students undertake two weeks of practical exercises in survey planning, execution, and analysis following spring examinations. Management of occupational health and safety is discussed and applied in field operations. **NOTE:** Credit will not be given for both GGE 3023 and GGE 3024. *Prerequisite:* GGE 3022.

GGE3024   Survey Design Practicum (Off-campus)   4 ch

Apply principles of survey design and analysis to a control survey involving total station, differential levelling, and GNSS observations. Students undertake a series of practical exercises in survey planning, execution, and analysis completed remotely during the summer term. Management of occupational health and safety is discussed and applied in field operations. **NOTE:** Credit will not be given for both GGE 3023 and GGE 3024. *Prerequisite:* GGE3022.

GGE3042 Introduction to Global Navigation Satellite Systems 5 ch (3C 3L)

Principles of space geodesy. The celestial sphere, its coordinate systems, and variations in coordinate systems. Time keeping. Satellite based positioning systems, especially the Navstar Global Positioning System (GPS) including observations, development of mathematical models, static and dynamic positioning, error analysis, software structure, and processing considerations. Real Time Kinematic (RTK) GNSS positioning. *Prerequisite:* MATH 1503. *Co-requisite*: MATH 2513.

GGE3111   Introduction to Adjustment Calculus   5 ch (3C 3L)

Calculus of variations; quadratic forms; least-squares principles; least-squares method, weight matrix, variance factor; parametric, condition and combined adjustment. *Prerequisites:* MATH 1503, MATH 2513, STAT 2593.

GGE3122   Advanced Adjustment Calculus   4 ch (3C 2L)

Quality control, uni- and multivariate statistical testing; approximation, prediction, filtering in observation and frequency domains; constraint functions; weighted parameters; nuisance parameters; sequential adjustment; Kalman filtering. *Prerequisites:* GGE 3111, MATH 2513; *Co-requisite*: CS 3113.

GGE3202   Geodesy I   4 ch (2C 3L)

Learn introductory geodesy. This course covers institutional organization of geodesy; history of geodesy; motions of the Earth; tools to measure the motions of the Earth; measurement and theory of the Earth's gravity field; the geoid, ellipsoids, and datums; geodetic control in Canada; and reducing the impact of natural hazards on the Earth. *Prerequisites:* MATH 1503, MATH 2513.

GGE3342   Remote Sensing   5 ch (3C 3L)

Overview and physical basis of remote sensing. Space- and air-borne sensor systems, active and passive sensors. Fundamental geometry of photogrammetry. Image statistics. Rectification of digital imagery. Image enhancement, spectral and spatial filtering. Multi-spectral transformations. Thematic information extraction, classification and accuracy assessment, change detection. Credit will be given for only one of GGE 3342 or GGE 5342. *Prerequisite:* GGE 2423 or GGE 3423 or permission of instructor.

GGE3353   Ocean Mapping   5 ch (3C 3L)

Introduction to hydrography: geomatics aspects, trends and prospects, role in offshore management. Depth determination: seabed and seawater properties, non-acoustic methods, underwater acoustics, vertical and oblique incidence methods, bathymetric and imaging methods.

GGE3423   Introduction to Geographic Information Systems 4 ch (2C 3L)

Introduction to GIS technology; Application of GIS; understanding the nature of geographic data, from geographic data to geographic information (GI), Information Systems (IS), and GIS; earth size and shape; tracing and mapping entitles on the earth; geographic data sources and collection methodologies; evaluating the quality of the data sources; representing geographic data in the GIS; loading and managing geographic data in the GIS; analyzing geographic data, solving geographic related problems using GIS, mapping the results of that analysis using GIS, and publishing the results of the analysis on the web. Program credit cannot be given for both GGE 3423 and GGE 2423. *Prerequisite:* MATH 1503 or equivalent introduction to matrices and systems of linear equations; or permission of the instructor.

GGE4022   Precision Surveying   4 ch (2C 3L)

Measurements, processing, and analysis in densification surveys. Control surveys for photogrammetry and construction. Introduction to mining and tunnelling surveys, deformation measurements and analysis, and industrial metrology. Related issues of occupational health and safety and their management. *Prerequisites*: GGE 3022, GGE 3023, GGE 3122.

GGE4211   Geodesy II   4 ch (3C 2L)

Terrestrial, celestial and orbital coordinate systems; coordinate transformations; positioning in 3 dimensions, on the ellipsoid and on a conformal mapping plane. Height systems. Temporality of geodetic parameters. Earth observation systems. *Prerequisite:* GGE 3202.

GGE4313   Photogrammetry   5 ch (3C 3L)

Photogrammetric principles, systems, sensors and products. Geometry of vertical, tilted and stereoscopic aerial photographs. Fundamental photo and model space coordinate systems. Photogrammetric measurement and refinement. Direct and inverse coordinate transformations. Collinearity and coplanarity conditions, direct linear transformation and rational function models. Interior and exterior orientations. Concepts of aero-triangulation. Principles of images matching and epipolar geometry. DEM generation and orthorectification. Close range and UAV photogrammetry. Flight project planning. Principles and characteristics of airborne LiDAR systems. *Prerequisites:* GGE 3342 and GGE 3111.

GGE4423   Advanced Geographic Information Systems   5 ch (3C 3L)

Mapping concepts and Geographic Data Management and Analysis: (a)Mapping concepts: cartographic generalization and multiple representation, representation of the terrain (DEM/DTM/DSM/nDSM/Point Clouds/3D city models), interpolation methods, map design and interactive visualization; (b) Geographic Data Management and Analysis: database design theory, conceptual models (entity relationship model, UML), logical models (relational, object and object relational model), physical models, spatial index structures, algorithms for analysis of geographic data, graph theory, introduction to XML and XML-based languages for GIS, Spatio-temporal modeling in GIS. *Prerequisites:* GGE 2423 or GGE 3423 or permission of the instructor.

GGE4512   Land Administration II   3 ch (2C 1L) [W]

Introduction to modern issues in land tenure and administration from Canadian and international perspectives. Includes boundary disputes and uncertainties, aboriginal rights, land information management, reform of cadastral systems, coastal zone management, law of the sea, and delimitation of maritime boundaries. *Prerequisite:* GGE 2501 or permission of instructor.

GGE 4513   Survey Law I   3 ch (3C 2*L) [W]

Real property and boundaries in Canadian law. Estates in land, land granting and historical settlement patterns, land registration systems, and understanding boundary creation. Managing uncertainties and misalignments of title and possession. Dedication and survey public roads and highways. Introduction to indigenous title. *Prerequisite:* GGE 2501

GGE4700   Design Project and Report   6 ch (2C 2L)

A full year course (fall term then winter term) involving the design and implementation of a geomatics activity or project and a reporting on the results or outcome, all under the direct supervision of a faculty member or equivalent in industry. Lecture topics include: engineering economics and business management issues specific to geomatics; financial decision making in geomatics. Must be done in the student's final year of the programme.

GGE5011   Oceanography, Tides, and Water Levels   4 ch (3C 1L)

Descriptive and theoretical introduction to physical oceanography, focusing on the coastal zone and the continental shelf. Components of physical oceanography that affect the accuracy and operational conduct of hydrographic surveying. Detailed studies of the controls on sound speed structure (seawater properties, propagation and refraction). Detailed studies of the controls on surface water level (tides, waves and swell, vertical reference surfaces). Constituent extraction from tidal observations and prediction of tides. Discrete and continuous tidal zoning, including an introduction to coastal hydrodynamic models.

GGE5012   Marine Geology and Geophysics   4 ch (3C 1L)

Descriptive marine geology including all ocean depths, but focusing on the coastal zone and continental shelf. Components of surficial sedimentology that affect the accuracy and operational conduct of hydrographic surveying. Detailed studies of the controls on seafloor processes (deposition and erosion) and bottom backscatter strength (sonar performance, geomorphology, sediment classification). Descriptive and introductory-theoretical marine geophysics including single-channel, 2D multi-channel and 3D multi channel reflection seismic surveying. Marine refraction seismology.

GGE5022   Precision Surveying   4 ch (2C 3L)

Develop skills in design, execution, and analysis of diverse control and monitoring survey types. Students explore specifications for common types of survey, and later study specialized requirements and techniques for surveys in areas of limited extent, underground surveys, and surveys for monitoring movement over time. Unique health and safety considerations associated with these survey types are discussed. *Co-requisite*: GGE 3122.

GGE5042   Kinematic Positioning   4 ch (3C 2L)

Performance requirements, mathematical models, observation methods, processing strategies, uncertainties and other characteristics associated with moving marine, land airborne, and space vehicle positioning, orientation and attitude applications, using autonomous, terrestrial, satellite, and acoustic methods. *Prerequisites:* GGE 3042, GGE 3122, GGE 3353, GGE 4211.

GGE5083   Hydrographic Field Operations   4 ch

Complex Multidisciplinary Field Project (CMFP) focused on autonomous survey vessel operations to support a specific ocean mapping and nautical charting problem. The CMFP will include survey planning, equipment preparation, data acquisition, and data processing to generate ocean mapping deliverables. *Prerequisites:* GGE 3353, GGE 5011, GGE 5012, and GGE 5311.

GGE5222   Gravity Field in Geomatics   4 ch (2C 3L)

Build an in depth understanding of Earth's gravity field and its applications to various aspects of Geomatics. Stuents learn the theory of Earth's gravity field and its temporal variations. Space, airborne and terrestrial observational methods associated with absolute, relative, network, and moving-base gravimetry are covered, as well as errors in these techniques. Mathematical models, gravity field parameters and transformations, and a slection of applications (e.g., geoid, determination, height systems, mass transfer) are also covered. *Prerequisites:* GGE 3122, GGE 4211.

GGE5242 Global Navigation Satellite Systems for Geodesy   4 ch (3C 3*L)

Review of coordinate systems. Orbital dynamics. GPS for high precision positioning and navigation. Major practical lab in GPS positioning. *Prerequisites:* GGE 3202, GGE 4211.

GGE5311   Advanced Hydrography   4 ch (2C 2L)

Advanced acquisition, processing and delivery of ocean mapping data. Topics covered include: Multibeam sonar system setup, integration, application and troubleshooting; survey planning and reporting; advanced multibeam sonar data processing, including water column object detection; and hydrographic data management. *Prerequisites:* GGE 3353 and GGE 5011.

GGE5322   Digital Image Processing   4 ch (3C 3*L)

Introduction to software implementation, including image data formats, programming standards, Python programming and libraries, and writing, compiling and running software codes. Computer vision methods, algorithms, and applications, including edge detection, feature extraction, image matching, mathematical morphology, image segmentation, image classification, object detection, and 3D creation. *Prerequisites:* CS 1003, MATH 1503, and GGE 3342 and basic programming knowledge, preferably in Python.

GGE5341   Advanced Technologies in Remote Sensing   4 ch (3C 2L)

Overview of Machine Learning (ML) and Artificial Intelligence (AI). Fundamentals, algorithms, and applications of widely used ML and AI methods in geospatial data analysis, including Supervised Learning, Unsupervised Learning, Fuzzy Logic, Wavelet Transformation, Artificial Neural Network, and Deep Learning. *Prerequisite:* MATH 1503 and GGE 3342 or permission of the instructor.

GGE5401   Geospatial Development   3 ch (2C 2L)

Programming skills required in the geospatial industry. Development of standalone programs, use of geospatial libraries, and extension of the functionality of geomatics software systems. *Prerequisites:* CS 1003 and GGE 3423 or permission of the instructor.

GGE5402   Geographic Databases   3 ch (2C 2L)

This course focuses on both the theoretical and practical issues related to the development of geographic databases and the extraction of knowledge from geographic data collections. Special attention will be given to recent technological developments and research directions. A series of Lab Sessions will run in parallel, using commercial and open source s/w tools, such as PostgreSQL/PostGIS DBMS, Oracle Spatial DBMS, MongoDB, Protégé, Quantum GIS s/w, WEKA Data Mining s/w, and other prototype s/w packages. *Prerequisite:* GGE 4423 or permission of the instructor.

GGE5403   Web Mapping and Geospatial Web Services   3 ch (2C 2L)

This course focuses on both the theoretical and practical issues related to the dissemination of mapping/geographic content on the web and the development of map mashups and geospatial web services. Students will learn how to design and implement web mapping applications and geospatial web services using free software tools. *Prerequisite:* GGE3423 (Introduction to GIS) or equivalent or permission of the instructor.

GGE5405   Introduction to Big Data & Data Science   3 ch (2C 2L) (LE)

Offers an overview of key techniques and technologies in big data analytics, and how data science is different from related fields. Through a combination of lectures and hands on exercises using R, MongoDB, and D3 visualization tools, students will learn to explore, clean, refine, analyze and visualize geospatial, streaming, unstructured and structured types of big data.

GGE5410   3D Geographical Information Systems   4 ch (2C 3L)

Strengthen skills in 3D geospatial data processing, managing and modelling; problem-solving; and teamwork. This course is designed to follow on from GGE 4423 and GGE 4313. Students will gain a more profound knowledge of 3D geospatial data and learn to design appropriate pipelines for 3D geospatial data processing, managing and modelling. Theoretical concepts along with hands-on individual and team-based experiences guide the students through analysis with 3D GIS platforms. *Prerequisites:* GGE 4423 and GGE 4313.

GGE5415   Real-Time Mobility Data Analytics   3 ch (2C 2L) (LE)

Focuses on teaching the principles, methods and tools of descriptive analytics (mapping what is moving), diagnostic analytics (mapping why something is moving), predictive analytics (mapping what will move), and prescriptive analytics (mapping how we can make it move). Explores real-world case studies through lectures and hands on exercises to allow students to replicate the analytics when facing similar data. *Prerequisites:* GGE 5405.

GGE5521   Survey Law   4 ch (3C 3*L)

Review of common and statute law affecting property, boundaries, and surveys. Role of a land surveyor in resolving boundary disputes and as an expert witness. Various types of legal surveys. Professional responsibilities, ethics. Case studies. *Prerequisites:* GGE 2501, GGE 3022, GGE 3023, GGE 3122, GGE 4211, GGE 4512.

GGE 5522   Survey Law II   4 ch (3C 2*L) [W]

Advanced Canadian law affecting real property, boundaries and surveys. Land registration systems and associated issues. Boundary descriptions and interpretation of boundary evidence. Role of the surveyor as an expert witness. Specialized topics including condominiums, water rights and boundaries, and indigenous rights to land. *Prerequisites:* GGE 4512 or GGE 4513.

GGE5833   Land Use Planning for Geomatics   4 ch (3C 3L) [W]

Introduction to urban and site planning and related environmental management issues. The evolution of cities, community planning and municipal administration, principles of land use, and the administration and enforcement of planning regulations. In the context of geomatics: site analysis and the physical, social, and environmental impacts of development on a site and its surroundings. The economics of land development. Restricted to students in their final year. *Co-requisites:* GGE 4512 or 4513 and GGE 5521 or 5522, or permission of their instructor.

GGE5901   Special Studies in Geomatics I   1 ch (1T 1L)

Directed study in an approved topic in geomatics. Supervision by a faculty member. Normally done in a student's final term. Credit will be given for only one of GGE 5901, GGE 5902, or GGE 5903.

GGE5902   Special Studies in Geomatics II   2 ch (1T 3L)

Directed study in an approved topic in geomatics. Supervision by a faculty member. Normally done in a student's final term. Credit will be given for only one of GGE 5901, GGE 5902, or GGE 5903.

GGE5903   Special Studies in Geomatics III   3 ch (1T 5L)

Directed study in an approved topic in geomatics. Supervision by a faculty member. Normally done in a student's final term. Credit will be given for only one of GGE 5901, GGE 5902, or GGE 5903.

GEOLOGICAL ENGINEERING

NOTE: See beginning of Section H for abbreviations, course numbers and coding.

GE1026   Geology Laboratory for Geological Engineers   2 ch (3L)

An introductory study covering topographic and geological maps (bedrock and surficial) and their interpretation; construction of cross sections; identification of common minerals, igneous, sedimentary and metamorphic rocks; geological structures (map analysis as a predictive tool); dating and the geological time scale; coastal processes; mass wasting (especially the recognition and amelioration of hazards related to debris flows, avalanche and landslides); and glaciations and glacial deposits (especially glacial deposits in eastern Canada and their significance to engineers).

GE2022   Engineering Geology   4 ch (3C 3L)

A study of geological materials and hazards for site investigation and assessment of risk and remediation; engineering classification of geological materials, properties and relationships; engineering in the existing and changing environment and exacerbation of natural processes; geological constraints for construction, foundations, tunnelling, waste disposal and mining, with case histories of geological problems in engineering projects. *Prerequisites:* ESCI 1001, ESCI/GE 1026 or equivalent or permission of the instructor. Equivalent to ESCI 2022.

GE4401   Applied Glacial Geology   4 ch (3C 3L)

Study of the mass balance of glaciers and characteristics of flow, erosion and deposition by active and stagnant ice masses, facies relationships in processes and products of glaciated terrain, and assessment of terrain from air photos, maps, geophysical and core data. Practical applications include: relevance of sample collection and analyses for geotechnical evaluation and mineral prospecting, and identification of industrial resources and terrain hazards. *Prerequisites:* ESCI 2211, ESCI 2321 or permission of the instructor. Equivalent to ESCI 4401.

GE4412   Applied Rock Mechanics (O)   4 ch (3C 2L)

Lectures and labs investigate applications of rock mechanics and rock engineering principles, using geological and geomechanical data in the open-ended design of surface and underground engineering structures sited in rocks, as well as geo-hazard mitigation. Analysis of design problems incorporates several industry standard software packages. The natural variability of geomaterials and implications for effective design

solutions are discussed. *Prerequisite:* ESCI 3411, or equivalent. Equivalent to ESCI 4412.

GE4981   Site Investigation   3 ch (3C/S)

Students will develop an understanding of the general principles and methods for site investigation and monitoring geotechnical, hydrogeological, and geoenvironmental projects. Topics include desk-top studies of existing information, planning and design of investigations, field safety, and data collection, presentation and interpretation. Seminars and field demonstrations by guest lecturers, most of whom are practicing engineers, introduce students to specialized field techniques and the development of conceptual site models. *Prerequisites:* CE 2113, GE 2022, ESCI 4512.

GE4993   Senior Team Design   8 ch (1C 2T 4L) [W]

Working in teams, students will complete a full year Geological engineering design project that draws on knowledge and skills obtained in previous courses. With support from academic and industry mentors, student teams will design a structure, system, process or resource management or development plan to meet a broad range of specified constraints for an identified client. Students will manage their projects professionally, prepare comprehensive design documentation, and present and defend all aspects of their design to the client and broader audience. *Prerequisites:* Restricted to students in their final year of the program, or with permission of the instructor.

GE5753   Engineering Hydrogeology   4 ch (3C 3L)

Covers important topics in quantitative hydrogeology, including: principles of saturated and unsaturated groundwater flow, solutions to groundwater flow problems, well hydraulics and pumping tests, and contaminant migration and attenuation processes in groundwater. *Prerequisites:* CE 2113, CE 3713. Equivalent CE 5753.

GE5943   Research Project   4 ch (1C 6L) [W]

Each student will work on an approved research project. The student will: present a proposal which will serve as the basis for the project, carry out work on the project with the guidance of an approved supervisor, submit written progress reports at specified times, write a final report at the completion of the project, present the subject of the report orally, and attend similar presentations by colleagues. *Prerequisite:* Restricted to students in the final year of the program, or with permission of the instructor.

GERMAN

See beginning of Section H for abbreviations, course numbers and coding.

GER1001   Introductory German I   3 ch (3C)

Closed to students with any knowledge of German. Enables students to understand, speak, read and write simple, idiomatic German by introducing them to the sounds, word forms, sentence structures and basic vocabulary of German. Sections of German 1001 may use different texts and approaches. No *prerequisite*.

GER1002   Introductory German II   3 ch (3C)

Continuation of GER 1001. *Prerequisite:* GER 1001, or equivalent.

GER1003   Berlin: Immersive Introduction to German   3 ch (3C) (O)

This course provides students with the opportunity to explore German culture and language in an intensive format in Germany's capital. Students are introduced to sounds, word forms, sentence structures, and basic vocabulary in the context of hands-on projects, field trips, and conversation groups. At the end of the course they should be able to engage in with German texts and produce elementary, idiomatic German phases. Students are exposed to everyday cultural situations, but are also presented with more complex topics such as German history and politics. This course is designed for students with little or no prior exposure to the German language (A1/A2). No *Prerequisites*.

GER1004   Vienna: Immersive Introduction to German (O)   3 ch

This course provides students with the opportunity to explore Austrian culture and German language through learning activities both inside and outside the classroom. Students learn to understand, speak, read and write simple, idiomatic German, being introduced to sounds, word forms, sentence structures and basic vocabulary of German. Using intensive grammar and vocabulary learning coupled with hands-on practical application through projects, field trips, and conversation groups, students are exposed to everyday cultural situations, but also more complex topics such as Austrian history and politics. This course is designed for students with little or no prior exposure to the German language (A1/A2). No *Prerequisites*. Open to students of all years. Taught on location as part of the Travel Study program Vienna.

GER1011   German for Business, Co-op and Exchange I   3 ch (3C)

This course is intended for business students and students across all faculties who seek a functional proficiency in German for career planning, work/internship or exchange programs in a German-speaking country. The course is designed to develop oral and written communication skills necessary in travel, university and professional contexts and provides knowledge of the cultures of German business, higher education and the working world. Special emphasis is placed on interactive situations and activities with German speakers in professional and everyday environments. No previous knowledge of German is expected or required. **NOTE**: Not open to students who have taken GER 1001 or equivalent.

GER1022   German for Business Co-op, and Exchange II   3 ch (3C)

Continuation of GER 1011. *Prerequisite:* GER 1011 or equivalent. **NOTE**: Not open to students who have taken 1002 or equivalent.

GER1033   Reading German for Beginners I   3 ch (3C)

Closed to students with any knowledge of German. Designed to enable students to read German texts in their respective fields of interest. Based on contrastive grammar, it requires no previous knowledge of German. Students soon learn to understand German texts in their disciplines. No *prerequisite*. Students who are taking or have previously taken GER 2001 and 2002 or equivalent (e.g., GER 2013 and GER 2023) cannot take this course.

GER1043   Reading German for Beginners II   3 ch (3C)

Continuation of GER 1033 (Reading German for Beginners I). Designed to enable students to read more sophisticated German texts than the ones they dealt with in GER 1033. *Prerequisite:* Only students who have passed GER 1033 with grades of B- and above should consider taking GER 1043. Students who have passed GER 1043 with a grade of B or above may take second year language courses.

GER2001   Intermediate German I   3 ch (3C)

Starting with a review of the fundamentals of GER 1001 and 1002, this course develops a larger vocabulary and deals with more complex sentence structures. It enables the student to read and write German with greater ease and to understand and speak the language more competently. *Prerequisite:* 6 ch of first year German or departmental approval.

GER2002   Intermediate German II   3 ch (3C)

Continuation of GER 2001. *Prerequisite:* GER 2001, or equivalent.

GER2003   Applied German Studies I   1.5 ch (LE)

This course provides students with the opportunity to explore German culture and language in the community through learning activities outside of the classroom. The objective is to apply knowledge and to develop skills in projects such as organizing cultural events (e.g. Oktoberfest, German Day) and in authentic situations (e.g., meeting native speakers, interacting with the German Society, reviewing films, etc.). Students will complete a variety of writing assignments for a portfolio and/or publication in suitable venues as well as opportunities for public presentations. Students register following a meeting with the director of the German program or the first-year German co-ordinator. All the coursework will be approved by the program director or the first-year German co-ordinator. Limited enrolment. Open to students of all years. *Prerequisites:* GER 1001 and GER 1002, or equivalent.

GER2004   Applied German Studies II   1.5 ch (LE)

This course is the continuation of GER 2003. It deepens the experience of independent study and learning activities outside the classroom. The organization of and participation in a German immersion weekend and a Language Awareness Day are two core activities which provide opportunity for employing professional skills: designing, marketing, running and documenting an event. Students will complete a variety of writing assignments for a portfolio and/or publication in suitable venues as well as opportunities for public presentations. Students register following a meeting with the director of the German program or the first-year German co-ordinator. All the coursework will be approved by the program director or first-year German co-ordinator. Limited enrolment. Open to students of all years. *Prerequisites:* GER 1001 and GER 1002, or equivalent.

GER3011   Modern German Usage I   3 ch (3C)

By discussing contemporary topics, both in the classroom and assignments, the students' competence in German is improved and their skills in idiomatic and written usage are developed. *Prerequisites:* GER 2001 and GER 1002 or equivalent.

GER3022   Modern German Usage II   3 ch (3C)

Continuation of GER 3011. *Prerequisite:* GER 3011 or equivalent.

GER4013   **Advanced German Usage I**   3 ch (3C)

Development of advanced skills in oral and written expression.
Prerequisite: Departmental approval.

GER4023   **Advanced German Usage II**   3 ch (3C)

Prerequisite: GER 4013 or departmental approval.

GER4073   **Literary Texts**   3 ch (3C) [W]

Reading and discussion of a selection of German literary texts.
Prerequisite: GER 3011 may be taken in conjunction with GER 3022.

GREEK

See beginning of Section H for abbreviations, course numbers and coding.

GRK1203   **Introductory Ancient Greek I**   3 ch (3C)

An introduction to the ancient Greek language spoken and written by the citizens of classical Athens. This introduction presupposes no previous knowledge of the language. This course is conducted in English.

GRK1213   **Introductory Greek II**   3 ch (3C)

A continuation of the introduction to ancient Greek. *Prerequisite:* GRK 1203 or equivalent.

GRK2205   **Intermediate Ancient Greek**   3 ch (3C)

An intensive intermediate second-level course in ancient Greek language designed to prepare the successful student for the reading of ancient Greek texts from classical literature. *Prerequisite:* GRK 1213 or equivalent. **NOTE:** Students who do not complete both GRK 2205 and GRK 3205 will receive only 3 ch for this course.

GRK3205   **Beginning Ancient Greek Reading**   3 ch (3C)

An intensive course designed to complete the study of basic grammar and to begin the development of skills in the reading of ancient Greek texts. *Prerequisite:* GRK 2205 or equivalent.

GRK3213   **Reading Ancient Greek Authors I**   3 ch (3C)

A reading course designed to strengthen skills in the reading of ancient Greek texts. *Prerequisite:* GRK 3205 or equivalent.

GRK3223   **Reading Ancient Greek Authors II**   3 ch (3C)

N/A

GRK3243   **Advanced Greek II**   3 ch (3C)

N/A

GRK3253   **Advanced Greek III**   3 ch (3C)

N/A

GRK3263   **Directed Reading in Ancient Greek**   3 ch

By arrangement with the department, students who have completed GRK 3203 and an additional 12 ch of advanced courses in Ancient Greek may register for this course after consulting with the directing Faculty Member on the selections to be read.

HISTORY

See beginning of Section H for abbreviations, course numbers and coding.

Introductory Level Courses
- HIST 1000s series courses.

Foundation Level Courses
- HIST 2000s series courses.

Advanced Level Courses
- European History HIST 3000s, 3100s, 3200s, 4000s, 4100s, 4200s series courses.
- Canadian History HIST 3300s, 3400s, 4300s series courses.
- American History HIST 3400s, 4400s series courses.
- Global and Thematic History HIST 3600s, 4600s series courses.
- History of Art and Music HIST 3700s, 4700s series courses.
- Military History HIST 3800s, 4800s series courses.
- History of Science HIST 3900s and 4900s series courses
- Directed Readings and Practicums HIST 3500s, 4500s, and 5000s series courses.

Honours Seminars
- HIST 5900 series courses

All Courses

516

Introductory Level Courses

HIST1001   **Past into Present (O)**   3 ch (3C) [W]

History starts here, with the news and public debates of today. This general interest course examines how our understanding of the world we live in is shaped by our knowledge of history. The course is divided into two or three modules (depending on available instructors), which will vary from year to year, and will range in focus from world crises to popular culture.

HIST1002   **The World Since 1945 (A)**   3 ch (3C) [W]

This general interest course examines major themes in global history since the end of the Second World War. Topics to be examined include the origins, evolution, and end of the Cold War; the emergence of new nations in Africa and Asia; comparative social change; cultural revolutions and the status of women; and recent responses to globalization and armed conflict.

HIST1004   **War in the Modern World (A)**   3 ch (3C) [W]

This general interest course analyzes the history of a current conflict by exploring the domestic and international contexts and options for ending the conflict. Combines lectures, discussion and simulations, to examine the role of allies, armies, paramilitaries, agents provocateurs, multinational corporations, non-government organizations and the United Nations.

HIST1007   **History of the Body (O)**   3 ch (3C) [W]

This general interest course examines how the body has been imagined, experienced, controlled, and understood, both historically and today, by art, medicine, technology, religion, science and popular culture. Considers the sexualized and pregnant body, the sinful and diseased body, the aesthetic and the medicalized body, and the body as machine from Galen and Descartes to the age of the computer, the cyborg and the gene.

HIST1008   **Belief Systems in Medieval Europe (O)**   3 ch (3C) [W]

Introduces the mental worlds of Europeans between the fall of the Roman Empire (c. 400 A.D.) and the beginning of the early modern period (c. 1500). This was the era of the Cult of Death, of new heresies and witch-beliefs, and of rampant anti-Semitism. Examines the belief systems of pagans, Christians, Jews, Muslims, as well as those who strayed from established doctrines, with a view to understanding the evolution of a more modern mindset.

HIST1009   **Epidemic Disease from the**   3 ch (3C) [W]
     Middle Ages to the Present (O)

This general interest course explores the changing perceptions of epidemic disease from the fourteenth century through to the present day. By focusing on infectious illnesses such as plague, smallpox, cholera, and influenza, this course considers the various socio-cultural, medical, and governmental responses to epidemics throughout this lengthy period of history. Particular attention is given to both change and continuity over time, posing (and seeking answers to) questions such as: how have responses to epidemic disease changed over time? how have they remained the same?

HIST1133   **Rome: The Eternal City II (O)**   3 ch (3C) [W]

This general interest course provides an introduction to the history of Rome from the Baroque period to the modern age. Normally taught on location. May not be taken by students who have taken HIST 2133 or HIST 3133.

HIST1135   **Italy Today (O)**   3 ch (3S) [W]

An introduction to the politics, society, and culture of Italy since 1945. Normally taught on location. May not be taken by students who have take HIST 3135.

HIST1305   **Prohibition and Rum-running in Canada,**   3 ch (3C) [W]
     1827-1948 (O)

This general interest course introduces the historical method while exploring the controversial theme of prohibition. Examines both protagonists in the struggle: prohibitionists, whose ideology was rooted in evangelical religion and an early strain of feminism, and the "Rummies" who fought to preserve a recreational drinking culture and the economic opportunities that it made possible.

HIST1315   **Canadian History on Film (O)**   3 ch (3C) [W]

This general interest course introduces the challenges of studying history on film by examining selected themes in Canadian history and their representation in documentary and dramatic films.

HIST1325   **Canada since 1945 (O)**   3 ch (3C) [W]

This general interest course addresses the major issues of contemporary Canadian history, including post-war reconstruction, the emergence of the welfare state, the Quiet Revolution in Quebec, Canadian external

relations, immigration policy, regional disparity, political leadership, and national identity. Restriction: Not available for credit to students who have taken HIST 2325.

HIST1415 "Cowboys and Indians?" 3 ch (3C) [W]
A History of Native People in Canadian and American Popular Culture (O)

This general interest course examines the conflict between Native people and the Canadian and US settler societies by focusing on how Native people have been and are still being portrayed within the popular culture of those settler societies through film, television, literature, music, material culture, sports, etc. This course will examine the underlying beliefs and values of these portrayals and how they have changed over time as well as the various responses by Native people. The course also explores the concept of "popular culture", the relationship between stereotypes and racism, the romanticization of Native Cultures, and the extent to which the "Cowboys and Indians" ideology continues to manifest itself in the rhetoric of resource development. Normally taught online.

HIST1451 The American Presidential Election in 3 ch (3C) [W]
Historical Context (O)

This political history course introduces students to some of the key issues surrounding each U.S. presidential campaign. Offered every four years to correspond with the American Presidential election cycle. It will normally be co-taught with Poltiical Science. Students who take this course cannot take POLS 1451.

HIST1615 Resist, Rebel, Revolt: A Global History of 3 ch [W]
Uprisings (O)

This course explores the forms, causes, and outcomes of resistance, rebellion, and revolution in a variety of different historical contexts. Beginning with pre-modern forms of insurrection and extending to present-day revolutionary activity, we will examine how historical actors mobilized or confronted categories of race, ethnicity, gender, and class. We set out to answer the following questions; How do people overthrow their rulers? Do radical upheavals require violence and terror? Do the outcomes of resistance ever match initial expectations? What does the act or revolt or rebellion tell us about power in a given historical moment? With a particular focus on histories of uprisings in Global South countries, we will examine how resistance, rebellion, and revolution not only mark transitions in world history, but also show continuities in histories, ideas, and national mythologies throught their legacies and impact.

HIST1625 The Spy in History (O) 3 ch (3C)

This general interest course considers the history of spying. It traces the evolution of espionage from the Middle Ages to contemporary times. In this class we will focus on some of the world's most infamous spies, and we will chronicle the role that these men and women played in our [hi]stories.

HIST1715 Looking at the Past: Art, Culture, 3 ch (3C) [W]
and Activism (O)

Examines histories of art, artists, and culture in resisting colonialism, heterosexism, and capitalism. Considers a variety of artists across historical periods who use traditional artforms such as painting and drawing; contemporary forms such as performance art, video, film, television, and internet art; installation art in museums and public exhibitions; site-specific and environmental art; and radical activist art to challenge the status quo in a variety of historical and geographic contexts. Restriction: Not available for credit to students who have taken HIST2715.

HIST1815 Military History from Plato to NATO (O) 3 ch (3C) [W]

This general interest course provides an introduction to the study of tactics, technology, battle control, logistics and management. Developments will be examined by studying selected campaigns and battles. Restriction: Not available for credit to students who have taken HIST2815.

HIST1825 "Nothing Civil About It": 3 ch (3C) [W]
Civil Wars Since 1900 (O)

This general interest course considers the phenomenon of civil war with a particular focus on the 20th and 21st century. We will consider multiple perspectives on individual conflicts in an attempt to understand the complexities and consequences of civil war. How do such wars begin, evolve, and end? What is their impact on individuals, organizations, socieities, nations, and the world?

Foundation Level Courses

HIST2013 Medieval History Part I: Europe to 1200 (O) 3 ch (2C 1T) [W]

This entry level course, which is recommended for both first-and second-year students, provides a survey of Western Europe from the end of the Roman Empire and the appearance of the German peoples until the end of the twelfth century. Focuses especially on the major political and social developments of medieval Europe, such as feudalism, the revival of towns, the conflict between Popes and Emperors, the crusades, the flourishing of medieval thought and the role of both women and men in medieval society. Restriction: Not available for credit to students who have completed HIST1010 or HIST1005.

HIST2014 Medieval History Part II: Europe 1200-1500 (O) 3 ch (2C 1T)[W]

This entry-level course, which is recommended for both first-and second-year students, continues the survey of the history of Medieval Europe, beginning c. 1200 and ending with the Renaissance. Focuses especially on the several crises facing Europeans during the later Middle Ages: popular uprisings, famine, the Black Death, the 100 Years War, Papal schism and the new heretical and intellectual challenges to orthodoxy. *Restriction*: Not available for credit to students who have completed HIST1010 or HIST1006.

HIST2023 Early Modern Europe Part I, 1300-1600 (O) 3 ch (2C 1T) [W]

This entry-level course, which is recommended for both first-and second-year students, surveys Western European history by examining aspects of the Italian and Northern Renaissances, early contact with Non-Western peoples, the Protestant and Catholic Reformations and the growth of nation states. Emphasizes developments in the economy and society, education, religion, culture and government. *Restriction*: Not available for credit to students who have completed HIST1020.

HIST2024 Early Modern Europe Part II: 1600-1800 (O) 3 ch (2C 1T) [W]

This entry level course, which is recommended for both first- and second-year students, continues the survey of Western European history by examining aspects of the rise of absolutist states, the Scientific Revolution, the Witch Hunts, the Enlightenment, overseas expansion and the French Revolution. Stresses developments in the economy and society, government, secular thought, culture, international relations and war. *Restriction*: Not available for credit to students who have completed HIST1020.

HIST2103 Modern Europe Part I: 1789-1914 (A) 3 ch (2C 1T) [W]

This entry level course, which is recommended for both first- and second-year students, surveys European history from the era of the French and Industrial Revolutions to the eve of the First World War. Topics to be covered include: the French Revolution and Napoleon; the Industrial Revolution and the rise of the working class; evolving political ideologies and movements; the forging of new nation states; changing class and gender relations; cultural upheaval; the motives for imperialism; the origins of the First World War. Not available for credit to students who have taken HIST1100 or HIST2100.

HIST2104 Modern Europe Part II: 1914 to Present (A) 3 ch (2C 1T) [W]

This entry level course, which is recommended for both first-and second-year students, surveys European history from the First World War to the present. Topics to be covered include: the First World War; the Russian Revolution; interwar cultural and social change; the Great Depression and political upheaval; the origins and course of the Second World War; Europe and the Cold War; social change after 1945; the impact of decolonization; the rise of the European Union; European debates over national identity. Not available for credit to students who have taken HIST1100 or HIST2100.

HIST2301 Indigenous and Settler Canada, Part 1 (O) 3 ch (2C 1T) [W]

This entry level course, recommended for either first- or second-year students, begins the survey of Canadian history from early human settlement of North America to Confederation in 1867. It will pay particular attention to the centuries after 1500 when interactions between Indigenous peoples and Europeans intensified, resource extractive economies developed sent North American products to foreign markets, and societies of Euro-North Americans were planted and became permanent. How Indigenous peoples accommodated, negotiated with, at times resisted these newcomers, and in turn how Europeans justified their intrusions into the lands of others, will be recurring themes. Not available for credit to students who have completed HIST1300 or HIST2300.

HIST2302 Indigenous and Settler Canada, Part 2 (O) 3 ch (2C 1T) [W]

This entry level course, recommended for either first- or second year students, continues the survey of Canadian history since Confederation, explored through the prism of Indigenous/Settler relations with a particular focus on Canada's evolution as a treaty nation. The course will examine wide-ranging topics and themes, including the Confederation debates, the settlement of and rebellions in the west, the numbered treaty system, changing patterns of immigration, the industrial revolution, residential schools and reservation system, the rise of the welfare state, Canada's role in foreign affairs and northern sovereignty, regional tensions and competing nationalisms within Canada as a multicultural society, and the rise of neoliberalism within resource economies. Not available for credit to students who have completed HIST 1300 or HIST 2300.

517

HIST2403   **Understanding 'America' I:**   3 ch (2C 1T) [W]
The United States to the Civil War (A)

This entry-level course, which is recommended for both first-and second-year students, surveys American history from the earliest European settlement through the Civil War. Topics include exploration and expansion, the European-Aboriginal encounter, colonization and Christianity, revolutionary ideas and independence, the early Republic, the frontier experience, slavery and resistance, antebellum culture, and sectional discord and conflict.

HIST2404   **Understanding 'America' II:**   3 ch (2C 1T) [W]
The United States since the Civil War (A)

This entry-level course which is recommended for first-and second-year students, surveys the modern history of the United States. The course considers national reconstruction following the Civil War, late nineteenth century industrial and geographic expansion, social unrest and progressive reform in the early twentieth century, the "roaring twenties", the "dirty thirties", the New Deal, the "Good War" of the 1940s, the Cold War, the Civil Rights Movement, liberalism and conservatism, the "Bad War" in Vietnam, the rebellions of the sixties, the Reagan era and beyond. Completion of HIST 2403 recommended but not required.

HIST2603   **Indigenous and Early Colonial**   3 ch (2C 1T) [W]
Caribbean History (A)

This survey course introduces students to a history of the Caribbean region from the indigenous era, beginning around 6000BC, to the late-eighteenth century. Topics covered include: indigenous politics, cosmology, and culture; European conquest and indigenous responses and resistance to conquest; Variations in politics and cultures between empires; the Middle Passage; plantation and urban slavery; the everyday lives of the enslaved.

HIST2604   **Revolution and Emancipation in the**   3 ch (2C 1T) [W]
Coloinal Caribbean (A)

Introduces students to a history of the late eighteenth and nineteenth century Caribbean, from the Haitian Revolution to the U.S. occupation of Cuba and Puerto Rico and the Cuban war of independence in the late nineteenth century. Topics covered include slave rebellion, the struggle to abolish the slave trade, anti-slavery and the abolitionist movement, the slave emancipation and struggles to define freedom, Indian indentureship, and nationalist and independence struggles.

Advanced Level Courses

European History

HIST3001   **West Meets East in the Middle Ages,**   3 ch (3C) [W]
1050-1450 (O)
Examines contact and conflict among the Latin Kingdoms of Europe, the Byzantine Empire and the Islamic Empire. Considers the crusades, crusader states, the position of the Jews, and the role of trade and intellectual development in the period.

HIST3006 Sixteenth-Century Europe: The Age of Reform (A) 3 ch (3C) [W]

The sixteenth century was one of the most tumultuous eras in European history, with the Reformations dividing Europeans into warring religious camps and religious dissenters facing widespread discrimination and persecution. This course will examine the religious, social and political transformations of Europe and Britain throughout the century. It will explore why Europeans wanted to reform their religious beliefs and institutions and how they went about it. Reform was applied also to political, economic, and medical beliefs and systems. Ordinary folk also sought reform, leading to the so-called "Peasants' War of 1525" and the Anabaptist kingdom of Münster, 1534-35, as well as to the destruction of religious art during the iconoclastic fury. The course concludes with how the religious passions unleashed by the Reformations led to new political-religious states, new attitudes toward religious diversity and tolerance, and to the intensification of anti-Semitism and the revival of witch hunting.

HIST3011   **Age of Empires (O)**   3 ch (3C) [W]

Examines the expansion of European imperial power during the nineteenth century, focusing upon developments in Asia and Africa. Explores the reasons for the renewal of European imperialism with a focus on the role of exploration, profit, religion, technology, and violence. Focuses on Asian and African responses to European imperial expansion, and the impact that colonial rule had on structures of class, gender, and race. Restriction: Not available for credit to students who have taken HIST 3008.

HIST3012   **Empires in Crisis (O)**   3 ch (3C) [W]

Examines challenges to European colonialism during the twentieth century. Explores structures of colonial rule and how they affected class, gender, and race relations in Africa, Asia, and the Middle East. Analyses the rise of anti-colonial movements and their challenges to imperial rule, within the context of the global crises of the years between 1914 and

1945. Concludes with examinations of the struggles for national independence after the Second World War, and the legacies of colonialism. *Prerequisites:* Prior completion of HIST 3011 an asset but not required. Restriction: Not available for credit to students who have taken HIST 3008.

HIST3015   **Racism in the West from**   3 ch (3C) [W]
Antiquity to the Enlightenment (O)

Explores how many populations, including the ancient Greeks, Romans, medieval and early-modern Europeans, molded their particular identities by constructing negative images of the "foreigner" or "other" based on perceived religious or ethnic differences. It examines in particular the formation and dissemination of religious and racial stereotypes and the inflaming of prejudicial passions that have led to violence. Particular emphasis will be placed on the long history of anti-semitism, and comparisons will be made with Byzantine and Muslim cultures. While it will focus on the subject primarily as a historical problem, the course will be interdisciplinary in approach, involving specialists from a range of disciplines.

HIST3016   **Racism in the West from**   3 ch (3C) [W]
the Enlightenment to Today (O)

Building upon HIST 3015, this course explores how, in the era of the Scientific Revolution, the Enlightenment, the growth of religious tolerance, the rise of nationalism, and the increasing secularization of western society, racism and anti-semitism continued not only to spread, but to be given a pseudo-scientific foundation, resulting in a variety of conspiracy theories and ultimately leading to the horrific Holocaust and racial and ethnic cleansing of the twentieth century. While it will focus on the subject primarily as a historical problem, the course will be interdisciplinary in approach, involving specialists from a range of disciplines.

HIST3025 History and Sexuality: Europe and the World (O) 3 ch (3C) [W]

This course offers students a transnational history of the changing ideas, identities, and practices associated with sexuality in the modern era, c. 1750 - present. Topics will include: religious belief and moral regulation, science, medicine, and the construction of homosexual, heterosexual and inter-sexual identities, the legal regulation of prostitution, birth control, and abortion, and sexual violence in war and genocide. We will consider the effects of competing ideologies (capitalism, communism, fascism, imperialism) on sexual life and highlight the complex interplay between gender, race, class, and intimate practices. Not available for credit to students who have completed HIST 3325.

HIST3033   **France in the Twentieth Century (A)**   3 ch (3C) [W]

Examines the political, social, and cultural history of France during a century of upheaval. Topics to be covered include the Dreyfus Affair; the First World War; culture and society between the wars; the Great Depression and the era of the Popular Front; the rise of French fascism; the Second World War and the Vichy regime; collaboration and resistance; postwar social and cultural change; intellectuals and politics; the government of General de Gaulle; and recent debates over immigration and identity. France's role as a colonial and postcolonial power is also a central theme in the course.

HIST3034   **The Viking World (O)**   3 ch (3C) [W]

Examines the Scandinvanian culture and society that produced arguably the most feared and respected warriors of the medieval period: the Vikings. Beyond the infamous swift ships and brutal reputations of these raiders, the Norse themselves were farmers, settlers, artisans, and traders, whose hardscrabble lives were much richer than once thought. We will examine many aspects of these lives, from homestead to settlement, from work to pastime, from pagan to Christian, beginnings in the late Iron Age and ending with the emergence of Christian kingdoms in Norway, Denmark and Sweden (c. 700-1100). In the process, we will engage with sources ranging from sagas and myths to material objects and archaeological finds, as well as the words of those who fought and traded with the peoples of the North.

HIST3053   **Berlin: From Empire to Republic (O)**   3 ch (3C) [W]

This course uses the city of Berlin to examine Modern German history. In visits to key historical sites, we will discuss the royal history of the Imperial period, soldiers and civilians in the two world wars, cultural innovation in the Weimar Republic, and the crimes of National Socialism. We will use the city landscape to talk about communism and capitalism during the Cold War, the rise and fall of the Berlin Wall, and the challenges and opportunities of European Union in the twenty-first century. Normally taught on location.

HIST3055   **The Generation of the Great War (A)**   3 ch (2C 1T) [W]

Offers a comprehensive introduction to the First World War, examining its causes, course, and aftermath within a military, political and social context. It focuses on how the war was experienced on both the war and home fronts, by soldiers and civilians alike.

HIST3063　　　　History of Modern Greece (O)　　　3 ch (3C) [W]
　　　　　　　　　(Cross-Listed: CLAS 3463)

An introductory survey course of the history of Modern Greece from the Greek War of Independence in 1821 to the Second World War. Special attention is paid to events and themes such as the Asia Minor Catastrophe in 1922 and the Greek Diaspora by utilizing literature and other historical sources and documentaries in order to present the society, culture and politics of Greece and gain a better understanding of the modern Greek identity. There are no *Prerequisites*.

HIST3085　　　　Modern Germany 1871-1945 (O)　　　3 ch (3C) [W]

Beginning with the 1871 unification of Germany, and ending with the Third Reich's defeat in the Second World War, this course explores numerous themes, including: political and cultural innovation, diplomacy, violence, gender relations, everyday life under democracy and dictatorship, memory and commemoration, war and genocide, and the changing place of Germany within Europe. We discuss the fractures and divisions within Imperial German society, the home and fighting fronts of the First World War, the short-lived but influential Weimar Republic, the rise of Adolf Hitler and the Volksgemeinschaft of the Third Reich, and the Nazi "Final Solution to the Jewish Problem" in Occupied Europe.

HIST3095　　　Modern Germany, 1945 to the Present (O)　　3 ch (3C) [W]

This course examines German history from the end of the Second World War to the present. Beginning with the Allied occupation of Germany in 1945, the course investigates the formation of two separate states: the German Democratic Republic and the Federal Republic of Germany. Using the tools of social, cultural, political, and gender history, the course considers themes such as: everyday life under communism and capitalism, Cold War politics, protest and terrorism, the memory of Holocaust crimes, the fall of the Berlin Wall in 1989, and the many challenges facing Germany in the post-unification era.

HIST3125　　The Cold War: An International History (O)　　3 ch (3C) [W]

Examines the evolution of the Cold War from 1945 to 1991. Topics to be examined include: the debate over the origins of the Cold War; the creation of opposing alliance systems in Europe; the Asian dimensions of the Cold War; the significance of the Cold War for Africa and Latin America; the rise and fall of détente; the end of the Cold War and the collapse of the Soviet bloc. Attention is paid to the social and cultural impact of the Cold War.

HIST3133　　Rome: from the Baroque to the Modern Era　　3 ch (3S) [W]
　　　　　　　　　(1527 to the Present) (O)

Studies the impact of the Catholic Reformation on Baroque Rome, the end of Papal Rome with the unification of the Italian nation, the urban expansion of the late nineteenth century, and Rome's emergence as the capital of Mussolini's New Empire. The creation of the Vatican City State is studied, and contemporary Roman life and politics will be experienced. Normally taught on location.

HIST3134　　Romanticism and Revolution in Rome (O)　　3 ch (3S) [W]

As the decades of faith in Enlightenment reason gave way to the emotional backlash of the Romantics, Rome provided a context for many of the aims of the new generation: the balance between Classicism and Romanticism, between the ruins of civilization and the struggle for a new political order, between nature and the imagination, between the past and the future. Designed as an interdisciplinary exploration of these subjects as they manifested themselves in late eighteenth- and nineteenth-century Rome, this course considers literature, music, art and philosophy as forces of innovation that helped shape the experience of social and cultural transformation. By visiting, seeing, reading and listening to the new styles of expression embodied by Romanticism, we explore the political issues central to the new aesthetic that inspired poets and patriots in Rome's Revolution of 1848. Normally taught on location.

HIST3135　　　　Contemporary Italy (O)　　　　3 ch (3S) [W]

Examines the politics, society and culture of Italy from 1945 to the present. Normally taught on location.

HIST3136　　　Rome and the Papacy in the Age of (O)　　3 ch (3S) [W]
　　　　　　　　　　　　Reformation

Beginning with an examination of the late medieval and Renaissance papacy, this course focuses on the role of the papacy in and its response to the Protestant and Catholic Reformations. The course gives special attention to Rome as the catalyst, locus and expression of reform. Normally taught on location.

HIST3144　　　Crime, Policing, and Punishment　　　3 ch (3C) [W]
　　　　　　　　　　in Modern Europe (O)

Examines how European states and societies have defined and responded to criminality since the 18th century. Explores how perceptions of criminals have evolved with reference to the categories of class,

gender, and race. Surveys the evolution of legal, policing, and penal systems, considering the impact of industrialization, ongoing cultural and social change, the emergence of dictatorships, and total war. Employs a comparative perspective, drawing on case studies from a variety of European nations.

HIST3203　　　　Early Modern London (O)　　　3 ch (3S) [W]

Early modern London was an exceptional city in many ways and it played a unique and pivotal part in the history of England, Europe and increasingly during this period, in a global context. This is an advanced level course designed to explore the nature of London and Londoners from 1485-1714. Normally taught on location.

HIST3215　Early Modern British History Part 1: 1485-1688　3 ch (3C) [W]

Surveys major governance, social and cultural themes of British history for the period 1485-1688. Explores religious, political, dynastic, economic, intellectual, and social transformations in England (and, to a lesser extent, Wales, Scotland and Ireland) during the Tudor and Stuart eras. Topics include: the rise of the Tudor state; the nature of English society; the English Reformation; overseas exploration, trade, and settlement; the coming of the Stuart monarchy; the Scientific Revolution; the Civil Wars and Interregnum; the Glorious Revolution. Not available for credit to students who have taken HIST 3170, HIST 3202, HIST 3204, or HIST 3242.

HIST3216　Early Modern British History Part 2: 1688-1830　3 ch (3C) [W]

Surveys major governance, social and cultural themes of British history for the period 1688-1830. Explores religious, political, dynastic, economic, intellectual, and social transformations in England, Scotland, and Ireland during the reign of Stuart and Hanoverian monarchs. Topics include: The Glorious Revolution; the unions of England, Scotland, and Ireland; the Enlightenment; industrialization; eighteenth-century politics; the quest for empire; the American and French Revolutions; the Napoleonic Wars. Not available for credit to students who have taken HIST 3170 or HIST 3242.

HIST3226　　　　Medicine and Society in the　　　3 ch (3C) [W]
　　　　　　　　　Early Modern British World (O)

Examines the social history of health and medicine in the early modern British world, c. 1500 -1800. Focuses on the relationship between medicine and society to explore how social, cultural, intellectual, and political factors helped to shape experiences of health, illness, and healing in early modern Britain and its Empire. The perspectives of patients will be considered alongside those of practitioners in the investigation of topics such as: early modern notions of the body, health, and environment; the role of religion, medical knowledge, authority, and the marketplace; the nature of the patient-practitioner exchange; public health responses; military and imperial medicine; the rise and function of medical institutions; medical ethics and professionalization. Evaluates such topics in relation to both continuity and change over the course of three centuries.

HIST4001 Heretics and Witches in Europe, 1350-1650 (A) 3 ch (2C 1T) [W]

Examines popular religion and magic in Late Medieval and Early Modern Europe and official efforts to transform "popular culture". Emphasizes the medieval inquisitions against heresy (twelfth to fifteenth centuries) and especially the phenomenon of European witch-hunting (fifteenth to seventeenth centuries). Explanations of the causes of the witch-hunt, its victims and eventual decline are highlighted.

HIST4002　　　　Europe in the Renaissance (O)　　　3 ch (3C) [W]

Studies society and culture in Europe, especially Italy, from the mid fourteenth century to about 1530. This was one of Europe's greatest periods of intellectual and cultural ferment and creativity, marked by great achievements in commerce, education (humanism) and the arts. It was also a period of considerable upheaval, including the plague, political intrigue, warfare, economic and social crises, witch-hunting and the devastating effects of the conquest of the Americas. The course will also examine the lives of women and men in the urban environment.

HIST4003　Women in the Early Modern Atlantic World (O)　3 ch (3C) [W]

Examines the ways in which the lives of women from Europe, Africa, and the Americas were shaped by "Atlantic World" experiences from the sixteenth through early nineteenth centuries. Considers how race and socio-economic/legal status influenced female experiences of patriarchy, sexuality, work, and agency by placing them into the broader social, cultural, political, and religious contexts of the early modern Atlantic World.

HIST4006 The Mental World of Europeans,1600-1800 (O) 3 ch (2C 1T) [W]

This course explores the fresh emphasis that early modern Europeans placed on learning, the exploration of nature, and new critiques of the societies in which they lived. The Scientific Revolution, social activism (such as the antislavery movement and early feminism), and the rise of

519

republicanism are examined in the light of contemporary thought and social currents.

HIST4007   The French Revolution and Napoleon (O)   3 ch (2C 1T) [W]

Examines the history of Revolutionary and Napoleonic France. Topics include: the origins of the Revolution; the fall of the French monarchy; the Great Terror; Revolutionary culture; the impact of the Revolution upon women, religion, and slavery; the rise of Napoleon; and the impact of the Revolutionary and Napoleonic War upon Europe.

HIST4012   Home Fronts at War (A)   3 ch (3C) [W]

Focuses on the European home fronts of the First World War, a conflict George Kennan termed the seminal catastrophe of the twentieth century. Historians increasingly refer to the First World War as the first "total war", as entire societies were scaled toward supporting the massive armies on the fighting fronts. The course takes students deep into the everyday experiences of European men and women on the home fronts.

HIST4013   The Holocaust: 3 ch (3C) [W]
Victims, Perpetrators, Bystanders (O)

Provides a thematic survey of the Nazi destruction of the European Jews. Examines the ideological underpinnings of the genocide, the policies leading up to and including the so-called "Final Solution" of the "Jewish problem", perpetrator motivations, Jewish responses to persecution and survival strategies in the camps. Also explores how the Holocaust unfolded in various European countries and the responses of nations, institutions and individuals to the mass murder of the Jews. Concludes with an examination of the post-war trials of war criminals and considers the definition of genocide after the Holocaust. Primary documents are discussed in the lectures, and several on-going historiographical are debates examined during class discussions.

HIST4015   The Origins of the Second World War (O)   3 ch (3C) [W]

Examines the international history of the period between 1919 and 1941. Topics to be covered include the Paris Peace Settlement of 1919; the attempt to rebuild the international system in the 1920s; the impact of the Great Depression; the evolution of alliances in the 1930s; the role of ideology in international relations; military and strategic influences on foreign policy; and the significance of both intelligence-gathering and public opinion. The course will focus on the foreign policies of Great Britain, France, Fascist Italy, Nazi Germany, the Soviet Union, Japan, and the United States.

HIST4105   Italy in the Twentieth Century (O)   3 ch (2C 1T) [W]

From the crisis of Liberal Italy in the First World War, this course studies the rise and decline of Mussolini's Fascism and the establishment of the Christian Democratic hegemony after 1945. The challenge of Italian Communism is examined as are the policies of the Vatican in the twentieth century.

HIST4247 Eighteenth-Century British Society and Culture (A) 3 ch (3C) [W]

Examines the changing meanings and representations of social status in Britain during the 'long eighteenth century,' circa 1688-1832. Considers whether (and to what degree) Georgian Britons may be regarded as "a polite and commercial people". Topics include: rank and status; gender roles; manners, politeness, and emulation; consumerism and consumption; mercantilism, trade, and the pursuit of wealth; the 'middling sort' and the rise of the middle class; urbanization and non-landed elites; early industrialization.

Canadian History

HIST3316 Immigration and Identity in Canadian History   3 ch (2C 1T) [W]

Examines the changing pattern of immigration to Canada from the early seventeenth century to the present, and the contribution of the various immigrant groups to the creation of a sense of Canadian identity.

HIST3326   Gender, Health and Medicine (A)   3 ch (3C) [W]

Explores the social history of health, disease, caregiving, and medical practice from a gender perspective. Will focus on nineteenth- and twentieth-century Canada and the United States. Classes will be arranged to allow for the thematic discussions on the topics such as changing beauty ideals and their link to "wellness", notions of physical "fitness" and health promotion, the medicalization of life cycle events such as puberty and child bearing/rearing, as well as the gendered experiences of a wide variety of health care-providers and patients involved in clinical encounters over the last two centuries. Intended for a multi-disciplinary cohort of students.

HIST3327   Science, Medicine and Health Care   3 ch (3C) [W]
in Canada (A)

This course explores the history of health and health care in Canada, from the era of the First Nations' initial contact with Europeans, to the present day. Topics include: Aboriginal and European conceptions of health and

illness; the impact of western infectious diseases on First Nations society; the health implications of rapid industrialization in the nineteenth century; the role of the state in sanitary reform and public health; the emergence of the medical and nursing professions; Canadian scientific research in medicine; the Canadian eugenics movement; and the origins and development of universal health care in the twentieth century. Race, class, gender, alternative medicine, and regional inequality will feature in small group discussions.

HIST3331   The Canadian Worker to 1914   3 ch (3C) [W]

The working-class experience in the age of Canada's industrial revolution, focusing on the transformation of the workplace and the rise of the labour question.

HIST3332   The Canadian Worker since 1914   3 ch (3C) [W]

The working-class experience in Canada since the time of the Great War, focusing on the changing relationships between labour, capital and the state.

HIST3355   Nature, Culture and the   3 ch (3C) [W]
Canadian Environment (O)

Examines the relationship of humans in their environment from the end of the last glacial period to the late 20th century. Topics include the impact of climate on the development of Canadian society, the evolution of human-animal relationships, changing ideas about nature, and political discourse on and regulatory solutions to pollution and other forms of environmental degradation.

HIST3364   History of Canadian-American Relations (O)   3 ch (3C) [W]

Surveys the evolving relationship between Canada and the United States from the American Revolution to the Free Trade Agreement. Stresses the twentieth century when Canada gained autonomy over external affairs. Beside the major political and economic components of the relationship, the course also examines cultural, social and environmental issues. Restriction: Credit may not be obtained for both HIST 3364 and POLS 3242 (Canadian-American Relations).

HIST3374   Truth & Reconciliation in Canada: 3 ch (3C) [W]
Working to Overcome the Legacy of the Residential Schools (O)

Situating the truth and reconciliation process in Canada within the similar efforts in other countries such as Rwanda and South Africa, this course focuses on the work of Canada's Truth and Reconciliation Commission to bring to light the nature and extent of the policies aimed at promoting the assimilation of Indigenous peoples into the Canadian settler society since the mid-19th century - particularly through the residential schools - and the varied and often harmful impact that these policies have had. The course also examines the diversity of reactions to the work of the commission, the extent of the success in implementing the commission's of 94 "Calls to Action," and the potential of these Calls to Action to meet the challenges currently facing Indigenous people in Canada.

HIST3378   First Nations and Canadian Settler Society I: 3 ch (3C) [W]
Pre-Contact to the 1876 Indian Act (O)

Examines the complex relationship between First Nations and Canadian settler society, including in New France, in British North America, and during the first years after Confederation. Emphasizes the efforts of First Nations people to preserve their cultures and independence in the face of an increasingly powerful colonial state. Topics include pre-contact First Nation and European societies, early contact, the fur trade, treaties of peace and friendship, the Royal Proclamation of 1763, land surrender treaties, and the policy of the assimilation of First Nations people into Canadian settler society. Restriction: Not available for credit to students who have taken HIST 3374.

HIST3379   First Nations and Canadian Settler Society II: 3 ch (3C) [W]
The 1876 Indian Act to the 2008 Apology for Residential Schools (O)

Examines the complex relationship between First Nations and Canadian settler society, and emphasizes the federal government's attempts to assimilate First Nations people into Canadian settler society and the resistance by First Nations people to these efforts through such means as court cases, protests, and cultural revitalization movements. Topics include the Indian Act and subsequent amendments, Indian residential schools, government agricultural policies, First Nations political organizations, the 1969 White Paper, the push for First Nations rights and self-government, land claims, and the federal government's apology for residential schools. Restriction: Not available for credit to students who have taken HIST 3374.

HIST4313   A History of Women in Canadian Society   3 ch (2C 1T) [W]

A course in social history focusing on the changing roles of women in the public and private spheres in the nineteenth and twentieth centuries, with special emphasis on the role of women in the work force.

HIST4326   Revolutionary and Loyalist Era Medicine   3 ch (3C) [W]

Explores the social, cultural, and geo-political dimensions of medicine thoughtout the British Atlantic World between the 1760s and the 1830s - a time of imperial expansion, revolutionary fervor, and intense warfare. It focuses on the experiences of patients and practitioners across multiple locations, including the British Isles, North America, the West Indies, and Africa. Particular attention is assigned to civilian, imperial, and military contexts during the American and French Revolutions and the Napoleonic Wars. Among other resources, this course draws upon The Loyalist Collection at the Harriet Irving Library.

**HIST4341   History of the Atlantic Provinces to   3 ch (2C 1T) [W]
Confederation**

Surveys the region from before the advent of written records to its entry into Confederation. It treats the impact of immigrant cultures, struggles for empire, the development of a cultural mosaic, the emergence of distinctive provincial societies and the forces that led to union.

**HIST4342   History of the Atlantic Provinces after   3 ch (2C 1T) [W]
Confederation**

Surveys the history of the region from Confederation to the present day, with focus on the vicissitudes of the Maritimes within Confederation and movements for social, economic and political reform.

HIST4351   New Brunswick, 1784-1860   3 ch (2C 1T) [W]

Emphasizes social and administrative history. Topics include the establishment of government (especially administrative and legal systems); Loyalist, British, Acadian and Native interaction; church-state relations; education and schooling; management of Crown lands and the economy; family, household and society. (This course is recommended for students in the Law in Society Program.)

HIST4352   New Brunswick, 1860 to the Present   3 ch (2C 1T) [W]

Emphasizes the changing role of government in provincial life. Topics include the background of Confederation; religion, language and education; transformations in local government; the politics of railways, energy and highways; transfer payments and social welfare; the growth of the provincial bureaucracy; and the emergence of Acadian and Native issues. (This course is recommended for students in the Law in Society Program.)

HIST5334   Policing in Canada, 1763-present (O)   3 ch (3S) [W]

Examines the rise of the Canadian settler state through the lens of surveillance and policing. Looks at the relationship between capitalism, liberalism, and settler colonialism. Topics include state surveillance of labour movements, Indigenous resistance to Canadian imperialism, and Black liberation. Also examines settler state methods used to quell resistance such as appropriating sites of resistance into dominant power structures, violent suppression, restriction of movement, and the creation of a security apparatus to police Black, Indigenous, and otherwise racialized people.

American History

HIST3402   The American Revolution (A)   3 ch (3C) [W]

Examines the causes, results and nature of the American Revolution. Themes include imperial relations, the internal development of the colonies and states, the development of revolutionary ideas, and the formation of the federal government.

HIST3403   The Loyalists (A)   3 ch (3C) [W]

Studies the American Loyalists before, during and after the American Revolution. The first half deals with their emergence, 1763-1776, their role in the War of Independence, their treatment by the rebels, and the Peace Treaty of 1783. The second half deals with their exile in Britain, Sierra Leone, the West Indies, the Bahamas, Bermuda and what became Canada, to about 1814. An epilogue traces their myths, revivals and long-term effects down to the present.

**HIST3407   The United States: Civil War and   3 ch (3C) [W]
Reconstruction (A)**

Deals with the political, economic, diplomatic, and military dimensions of the civil War. Discusses the development of reconstruction policies both during and after the war and their implementation in the South.

HIST3408   American Radicalism and Reform (A)   3 ch (3C) [W]

A survey of American social and political movements for change from the founding of the United States to 'the present. Considers the radical legacy of the revolutionary era, the women's suffrage and abolitionist movements, utopianism, populism, progressivism, radical unionism, anarchism, socialism, communism, African American struggles for civil rights, the new social movements of the sixties, identity politics, and recent resistance to capitalist globalization.

HIST3413   African America (O)   3 ch (3C) [W]

A survey of African American history from slave times to the present, the course will focus on culture and politics. Among the themes we explore are ideologies of racism, systems of domination, the nature of resistance, movement building, liberation strategies, African American identity, and the intersection of racial, class, and gender politics.

HIST3414   Imperial America (O)   3 ch (3C) [W]

Surveys the history of the foreign relations of the United States from its emergence as a world power late in the nineteenth century to its current global pre-eminence. Topics include the "New Imperialism", Wilsonian idealism, inter-war isolationism, the "Good War", the Cold War, Vietnam, "realpolitik", the "New World Order", globalization, and the "War on Terror".

HIST3415   America at the Movies (O)   3 ch (3C) [W]

An exploration of films as reflections of American history and of American history as it is projected in films. Students learn to "read" films as historical documents and consider the role of films in shaping understandings of history. The course will concentrate on a small number of themes, genres, and problems, and endeavour to illuminate these through the critical analysis of select films in historical context.

HIST3416   Urban North America   3 ch (3S) [W]

Addresses developments within and among North American cities and explores changes in the conceptions of cities in North American thought and culture. Using New York City as a case study, examines some historical literature of cities and enters the debates among historians over the significance of class, ethnicity/race, gender and region in urban history. Also studies the lives of urban dwellers, and chart shifts in the way people organized their lives in cities. Major themes for this course include the changing physical structure and form of cities over time; processes of urbanization and sub-urbanization; city planning; the economies of cities; urban institutions; urban populations; and city politics. Normally taught on location.

**HIST3417   Dark Artifacts: Film Noir and the Other America, 3 ch (3C) [W]
1940-1965 (O)**

Dark artifacts is a social and cultural history of the United States using visual culture, especially film noir, as a means of exploring a set of themes that were central to the period. It will include lectures, readings, discussion, and public service films focused on such themes as race, class, gender, infidelity, organized crime, and nuclear bomb anxiety. Each week a film noir from the period will be watched and discussed. This is not a film course per se; nor is it designed to showcase the best films of the so-called 'noir cycle.' The films have been chosen for their articulation of alternative viewpoints and/or the anxieties of the post-war decades. Most of the films that will be shown provide a counter-narrative to the prevailing view of America projected by mainstream Hollywood, the establishment press, and the government.

HIST3418   North American Slavery (O)   3 ch (3C) [W]

Examines the cultures and economies of Black slavery in North America and the Caribbean, and the role of the American Revolution in creating a slavery diaspora in such disparate locations as Nova Scotia, London, Sierra Leone, and Australia. Particular attention is given to slavery in Canada, including Canada's role in the Underground Railroad movement, and the larger legacy of slavery and anti-Black racism in Canada and in North America more generally. A central theme is slave resistance, embodied in such actions as talking back, running away, committing arson, and participating in slave revolts and insurrections.

HIST3419 New York City: From Colony to World Capital (O) 3 ch (3S) [W]

Examines the development of New York City from its establishment by the Dutch as New Amsterdam in the 1600s, through its development as one of a handful of "world" cities whose influences extend around the globe today. Will consider such historical themes as urban form and architecture, city people and populations, culture and recreation, city politics and social movements, the environment, and economics of cities. Will explore the history of New York City in comparative perspective, using this city as our main case study. Normally taught on location.

HIST3455   The Harlem Renaissance (O)   3 ch (3C) [W]

Begins by considering some of the major themes, controversies and personalities in African American history, 1865-1920, in an attempt to contextualize the surge of Black cultural production known as the Harlem Renaissance. The course then focuses on the Renaissance itself, and particularly on the racial, class and gender politics that informed the creation of literature, music and art by African Americans in New York City in the 1920s and 1930s. Normally taught on location in New York City. Restriction: Students cannot obtain credit for both HIST 3455 and HIST 4455.

HIST3457   Culture and Modernity in   3 ch (3C) [W]
Twentieth – Century America (O)

Explores the emergence and spread of modern American culture in historical context. In addition to considering cultural forms and practices such as music, literature, film, television, the visual arts, comedy, advertisement, shopping, driving, dating, play childrearing, exercise, and nightlife, the course will examine such pervasive themes as the rise of a culture of consumption, the 'therapeutic' culture, culture and violence, the cultural construction of gender, minority and resistance cultures, culture and ideology, and culture globalization.

HIST3461   Spying on the World: CIA [Hi]stories (O)   3 ch (3C) [W]

Introduces the history of the CIA. [Hi]stories of the CIA and its use of "related activities" have long remained in the shadows. While a number of new books and articles have been published, many historians have argued that because the vast majority of documents ar still classified, we still do not have an accurate understanding of the past. In this course we will examine a number of intelligence related topics and reflect on whether recently declassified documents have changed our understanding of these events.

HIST3475   Removal, Allotment, Termination,   3 ch (3C) [W]
Self-Determination: American Indian Policy, 1824-2004 (O)

Examines the nature and evolution of American policies toward the Native peoples within its borders. Topics include the forcible seizure of Indian lands through war, the treaties and the creation of reserves, the drastic reduction of the reserves by the mid-20th century through "allotment," subsequent federal government attempts to end its trusteeship of Indian lands and relocate Native people to the cities, and how - beginning in the 1960s - Native people began to assert significant control over their lives and lands. Restriction: Not available for credit to students who have taken HIST 3375.

HIST4452   The Vietnam War (O)   3 ch (3C)

The Vietnam War is one of the most controversial subjects in American history. Scholars remain divided on a number of key questions: why did the US go to war; what American president was most responsible for how the conflict unfolded; could the US have "won" the war if it had adopted a different strategy; did public opinion and the anti-war movement play a role in ending the war, and why did some Americans support the war while others did not? This class is designed to address these questions and a multitude of others. The thesis of the course is that there is no one history of the Vietnam War, but rather a number of competing historical interpretations. In the class students will be asked to understand and evaluate these interpretations to that they may acquire a richer appreciation for the complexity of the Vietnam War in particular; and of history in general.

HIST4453   Cold War [Hi]stories (O)   3 ch (3S) [W]

Introduces the students to the American historiography of the Cold War/cold war. Rather than concentrating solely on the events of these years, the course concentrates on the interpretive differences that have developed among historians who have studied these events. Students will participate in scholarly debates.

HIST4495   America in the Sixties (O)   3 ch (3C) [W]

An examination of the most tumultous period in the recent history of the United States. Topics include the Cold War, the African American freedom movement and Black Power, the sexual revolution, the new left and the counterculture, the psychedelic movement, women's liberation, Vietnam and the anti-war movement, the conservative blacklash and the sixties in myth and memory. The central focus of the class is how the events of this watershed decade continue to shape American culture and politics? *Prerequisite:* HIST 2404 or permission of the instructor.

Global and Thematic History

HIST3615   A History of Slavery through Film (O)   3 ch (3C) [W]
and Literature

Explores the history of race, slavery, and freedom in the Atlantic World through autobiography, literature, and film. Central themes include the emergence of race as a justification for slavery, the Middle Passage, the construction of slave narratives and the developing genre of autobiography, the politics of abolition, and the changing depictions of slavery in the modern world.

HIST3616   Caribbean History to 1886 (O)   3 ch (3C) [W]

This course is a survey of the history of the Caribbean region from the indigenous era, beginning around 6000BC, to the final abolition of slavery in Cuba in 1886. Topics include the society, politics, and culture of the indigenous Caribbean; European trade and settlement; indigenous responses and resistance to conquest; variations in European imperial systems; the transatlantic slave trade; slave law; creolization, plantation slavery and slave society; the politics and culture of the enslaved;

enslaved resistance; the Haitian Revolution; agriculture and society beyond the plantation; and slave emancipation.

HIST3624   A History of Climate Movement   3 ch [W]
(On-Line Course) (O)

Examines the origins and evolution of global climate movement from its beginnings during the 1970s until the present day. The focus will be on the agency of climate activists (both as individuals and within nongovernmental organizations), how the climate movement fits within the history of social movements, the various tactics utilized by activists - e.g. fossil fuel divestment, climate strikes, and "distributed action" - and the success and shortcomings of such efforts, how grassroots climate action has evolved over timeand within specific countries, and the factors that have contributed to the recent rapid expansion of the climate movement (e.g., the clear scientific consensus on the looming catastrophe, "climate anxiety", among particularly the young, and the differential impact of climate change on the Global South and the Global North).

HIST3625   Disability History (A)   3 ch (3C) [W]

This course uncovers a history of disability in North America from pre-conquest to the twentieth century. It traces the experiences of individuals and communities of people with a wide range of visible and invisible conditions now understood as "disabilities." Rather than treating disability as merely a medical impairment, we will explore the historical and cultural variability of disability. Topics covered include: indigenous notions of ability and disability; disability and colonialism; education and institutions; gender, sexuality, and race; eugenics; freak shows; social welfare and charitable programs; disability and war; the Deaf community; and the disability rights/independent living movement.

HIST3651   Growing up: Histories of Children,   3 ch (3C)
Youth and Family (A)

Explores various historical aspects of childhood, adolescence and family life that may include education, health, child labour, child migration, juvenile delinquency, amusements, and/or institutionalization. Discusses changes over time in both adult perceptions of childhood and the lived experience of growing up, as well as the intersections of race, class, gender, and age-based identities. Not available for credit to students who have completed HIST 3351.

HIST4606   Gender, Race, and Disability   3 ch (3C) [W]
in Colonial Contexts (O)

Explores the historical intersections between gender, race, and disability in colonial contexts from 1492 to the present, with a focus on the British Empire. Examines the connections between imperial power and ideas and practices of the body, the role of colonial science in the formulation of ideas about race, sex, and difference, and the role of the penal state in producing disability. We will consider a wide range of themes including conflict and displacement, colonial medicine and health, disability and poverty, slavery and the slave trade, forced migration, state violence and incarceration, resistance and resurgence, and Indigenous, Black, and decolonizing methodologies.

HIST4608 Beastly Histories: Humans and Other Animals (O) 3 ch (3C) [W]

What defines a human? What defines an animal? Throughout the course of human history, people have interacted with other animals, not only using them for food, clothing, labour and entertainment, but also associating with them as pets and companions, and even appreciating their behaviours intrinsically. Non-human animals have been our symbols and models, and they have even channeled the sacred for us. This course will explore the interactions of humans with other animals from roughly the fifteenth to the nineteenth century. A key theme in this course is the use of animality as a trope to justify the subjugation and dispossession of certain groups of peoples.

HIST4625   Gender and Slavery in the Atlantic World (O)   3 ch (3C) [W]

This course examines the relationship between gender and the experience of slavery, abolition, and post-emancipation in different societies in the Atlantic World from the early 17th century to the late 19th century. Geographic regions covered include Brazil, the Caribbean, Spanish America, the U.S. South, West Africa, and Western Europe. The course discusses themes relating to the impact of slavery and emancipation on the social construction of race, gender indentities, class relations, and political authority in several slaveholding and slavery-based Atlantic world societies. Gender's impact on labour and familial experiences in slaveholding and slavery-based societies is also a major focus. The course is designed to give students transnational, trans-imperial, and comparative insight into how slavery and gender have shaped relations within and between communities in the Atlantic region.

History of Art and Music

**HIST3701	The Cultural Turn: Cultural Studies in	3 ch (3C) [W]
	Historical Context (O) (Cross-Listed: CCS 3701)**

Traces the history of cultural studies from its debated foundation through the Birmingham school in post-war Britain, to its reshaping by post-Marxist, postmodernist, feminist, postcolonial, and diasporic perspectives. Analyzes the key debates in cultural studies at the onset of the twenty-first century, which include the field's reorientation towards the study of popular culture, activism through cultural politics, the politicization of knowledge and of the academy, and "the cultural turn" of the humanities and social sciences.

**HIST3725	Baroque Art and Culture in Rome (O)	3 ch (3C) [W]**

Explores the art and architecture of the 15th to the 17th centuries in Rome. Through visits to churches, palaces, galleries, museums, and public spaces such as fountains, monuments, and piazzas, participants consider a range of key issues including artistic styles and techniques, the display of religious belief, the assertion of social and political authority, the status of female artists, and the representation of the body. Normally taught on location.

**HIST3735	The History of Modern Art (O)	3 ch (3C) [W]**

Examines the development of painting, sculpture and architecture from 1863 until approximately 1950 in Europe and the United States.

**HIST3736	Decolonizing Art History (O)	3 ch (3C) [W]**
Examines art and art history in settler colonial societies, including Argentina, Canada, the United States, Australia, Aotearoa/New Zealand, South Africa, India, and Palestine. Using Lorenzo Veracini's concept of "the settler colonial global present," we look at anti-colonial and Indigenous-led movements from settler colonial societies around the world as they pertain to art and culture. We will pay particular attention to the use of land, water, and relations with plants and animals in art production.

**HIST3745	Visual Cultures and Colonialism (O)	3 ch (3C) [W]**

This course examines visual culture produced in the context of colonial and imperial histories. Students consider twentieth- and twenty-first century interpretations of colonialization from non-European perspectives. We will focus on art and film, but will also draw upon literary, political, and theoretical texts.

**HIST3765	History of Music in Medieval and	3 ch (3C) [W]
	Renaissance Periods (A) (Cross-Listed: MUS 3765)**
Introduction to music between 800 and 1600, studying representative styles and putting this music in a historical perspective.

**HIST3775	History of Music in the Late Baroque and	3 ch (3C) [W]
	Classical Period (A) (Cross-Listed: MUS 3775)**

Begins with an examination of the stylistic background of music of the Baroque Period, and follows the development of musical form and style through the late Baroque and Classical eras, i.e., from c. 1700 - c. 1830. Some attention will be given to the role of the musician in the context of the social history of the time.

**HIST3785	History of Music in the Romantic Era (A)	3 ch (3C) [W]
	(Cross-Listed: MUS 3785)**

Traces musical development in nineteenth century Europe in its cultural-historical milieu, mainly in France and Germany. Examines the development of the orchestra, and the French and Austro-German contribution to that development, the role of nationalism in music and the role of the opera.

**HIST3795	A History of Music in the Twentieth Century (O) 3 ch (3C) [W]
	(Cross-Listed: MUS 3785)**

Begins with an examination of the Post-Romantic composers, particularly Mahler and Strauss. Studies Debussy and the Impressionists, the Second Viennese School (Berg, Schoenberg, Webern) and its impact on twentieth-century music and the tonalist composers of the first half of the century. Examines music as an art form in North America.

**HIST3796	History of the Music Dramas (O)	3 ch (3C) [W]
	of Richard Wagner (Cross-Listed: MUS 3796)**

An examination of the theoretical constructs behind Wagner's music dramas, the compositional histories of some of the dramas of the 1840's, and then of the Ring Cycle itself. Some attention will be given to the performance history of the dramas as well.

**HIST4705	Art Histories and Critical Theories (O)	3 ch (3C) [W]**

Explores global critical theory as it has shaped art history, artists, and art production from the nineteenth to the twenty-first centuries. Theories examined include those located in art formalism, Marxism, feminism,

gender, and sexuality studies, queer studies, material culture studies, psychoanalysis, post-structuralism, the Anthropocene and environmentalism, postmodernism, Indigenous studies, Black studies, and postcolonial, anti-colonial, and decolonial studies. Examines critical shifts in theory as they relate to narrating the histories of art and to the work and lives of artists.

Military History

**HIST3803	War Through Film (A)	3 ch (3C) [W]**
Examines how selected themes in the history of war have been represented in both documentary and dramatic films, how film has shaped our understanding of the nature of war, and how it is used as an historical document by military historians.

**HIST3806	The Mediterranean in the Second World War:	3 ch (3C) [W]
	Strategic Crossroad of a Global War (O)**

Introduces the military and diplomatic history of the Second World War through an in-depth look at the Mediterranean campaigns, intrigues and deception conducted by the Western Allies against Italy and Germany. These campaigns in North Africa, Sicily, Italy and the Balkans generated a mixture of tension and compromise between American, British and Russian decision makers as well as the 27 separate contributing nations from Commonwealth Canada and India to free Poland, France and lesser known Brazil and Palestine. Focuses on the formulation of grand strategy, the links between civil and military war objectives, the problems of multi-national coalition warfare, and the planning and execution of combat operations in some of the most difficult and rugged terrain of the war.

**HIST3807	History of the Canadian Forces,	3 ch (2C 1T) [W]
	1867-1953 (A)**

After sketching the period of British military responsibility, this course traces the development of Canadian defence policy and the emergence of Canada's military forces from Confederation to the Korean War. The primary focus of the course is on the way in which hastily mobilized citizen armies fought the two world wars of the twentieth century and developed a high degree of professionalism in the process.

**HIST3808	History of the Canadian Forces,	3 ch (2C 1T) [W]
	1953-Present (A)**

This course traces the evolution of Canadian defence policy and the Canadian Forces through the Cold War and its aftermath. Special attention is paid to Canada's role in conflict zones around the world as part of the United Nations, NATO and other international coalitions, and to the often vexed relationship between Canada and its professional Armed Forces

**HIST3810	The Second World War in Italy (O)	6 ch (6S) [W]**

This team-taught course explores the rise of Fascist Italy, its alliance with Nazi Germany and the bitter struggle waged against them by the Allies and anti-fascist Italians from 1943-45. Will be taught on location throughout Italy, and centres on visiting historic sites, monuments and battlefields. Italy's unique geography made the campaign especially difficult for its participants and provides students with the subject for much of their study. Although the course addresses the campaign as a whole, special attention is paid to the highly successful, yet little-known, Canadian contribution to the battles at Ortona, the Liri Valley and the Gothic Line.

**HIST3811	Unconventional War in the Modern World (O)	3 ch (3C) [W]**

This course explores the rise to prominence of unconventional warfare since 1945. It discusses the reasons for dominance of these forms of warfare and the implications of it for governments, military forces and civilian populations. The course introduces students to the concepts of revolutionary war, guerrilla warfare, terrorism, covert action, and counter-insurgency, the theories and their theorists. These themes will be illustrated through a series of case studies, from the insurgencies of the post-1945 anti-colonial period to the ethnic conflicts and genocides of the post-Cold War era.

**HIST3814	Conventional War since 1945 (O)	3 ch (3C) [W]**

This course examines the causes, conduct, and consequences of the major conventional wars fought since 1945. It will explain reasons for the shift of war from Europe to the non-European world; changes in the way war has been conducted, with particular emphasis on technological change and the impact on the battlefield and on non-combatants; and changes in the way military forces are created, commanded and used. These themes will be illustrated through a series of case studies from the Korean War to the war in Iraq.

**HIST3825	The Nature and Limits of Military Power,	3 ch (3C) [W]
	1500-2000 (O)**

Explores the uses, abuses and development of military power within Western society since 1500. Focuses on how military power is shaped

and limited by the technological, social, political, ideological and economic factors of the day. Restriction: Credit will not be given for both HIST 1004 and HIST 3825; and this course is not available for credit to students who have taken HIST 2825.

HIST3835   Canada and the Experience of War,   3 ch (3C) [W]
1600-2000 (O)

Examines how Canadian history has been shaped by military action or the threat of it. Studies Canada as a battleground for European empires in the colonial period, later as an element of British imperial defense policy against the United States, and finally Canada's emergence as an independent player in the major conflicts of the twentieth century. Restriction: Not available for credit to students who have taken HIST 2835.

HIST4801   War and Society in the Age of Black   3 ch (2C 1T) [W]
Powder 1550-1865 (O)

Examines the nature of warfare in Europe and North America in the Early Modern period.

HIST4803   The First World War (O)   3 ch (2C 1T) [W]

A military history of the First World War, relating events on the various fronts to their social, political and strategic contexts and looking at tactical, technological and doctrinal developments in the use of arms.

HIST4804   The Second World War: 3 ch (2C 1T) [W]
The Sea, Land and Air Campaigns (O)

Examines the campaigns, their technical and tactical developments, and principal personalities.

HIST4815   Seapower and Empires, 1400-1850   3 ch (2C 1T) [W]

The use of seapower as an instrument of state policy during the period 1500 to ca. 1850. Examines institutional, theoretical, economic, political, social, and technological factors that shaped seapower over the period, with particular attention to Britain's experience.

HIST4825   Seapower and World Wars   3 ch (2C 1T) [W]

Focuses on the use of seapower and navies as instruments of state policy in the modern world since 1850. Emphasis will be placed on technological, political and strategic use of the sea in peace and war, with particular concentration on the use of seapower in the two world wars of the twentieth century.

HIST4835   Soldiering Through the Ages (A)   3 ch (3C) [W]

Examines the military experience of the soldier from the Greek hoplite to the modern warrior. Focuses on such subjects as recruitment, training and preparation for battle and wartime experience, through the vast primary literature that chronicles the life of the soldier.

HIST4851   Law and War (O)   3 ch (3S) [W]

Examines legal restraints on armed combat since circa 1500. Explores, among other topics, the recent influence of international legal regimens on military strategy, on land, sea and air action, and on peace-keeping.

HIST4861   Terrorism in History (O)   3 ch (3C) [W]

Examines the evolution of terrorism, primarily by non-state groups, as an agent of historical change. While considering debates over the definition, nature, and causes of terrorism, the course also explores the theories and theorists which shaped terrorist activities. Attention is devoted to the impact of terrorism on victims and societies and to the evolution of and controversies surrounding counter-terrorism policies. Case studies will derive primarily from the period between the late nineteenth century and the present.

History of Science

HIST3925   Technology and Society (A)   3 ch (3C) [W]

Examines contemporary ideas about how technology shapes and is shaped by society and culture, historically and today. Considers theories of technological determinism, technology and religious thought, the role of innovation in industrialization and economic growth; the problems of regulating risky technologies; the impact of Information Technology, and the shaping of Canadian science and technology policy. Restriction: Not open to students who have taken HIST 2925.

HIST3975   History of the Life Sciences (A)   3 ch (3C) [W]

Explores the struggle between vitalistic and mechanistic conceptions of life in the development of biology, the emergence of evolutionary theory and its social and religious consequences, and the technological influence of the life sciences on the rise of modern medicine and genetic engineering. No scientific background expected. Restriction: Not available for credit to students who have taken HIST 2915.

Directed Readings and Practicums

HIST3550   Directed Reading Course/Practicum   6 ch (3C) [W]

A detailed study of a specific historical topic. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisite:* Permission of the instructor and the Department.

HIST3554   Directed Reading Courses/Practicum   3 ch (3C) [W]

A detailed study of a specific historical topic. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisite:* Permission of the instructor and the Department.

HIST4550   Directed Reading Course/Practicum   6 ch (3C) [W]

A detailed study of a specific historical topic. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisite:* Permission of the instructor and the Department.

HIST4554   Directed Reading Course/Practicum   3 ch (3C) [W]

A detailed study of a specific historical topic. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisite:* Permission of the instructor and the Department.

HIST5550   Directed Reading Course/Practicum   6 ch (3C) [W]

A detailed study of a specific historical topic. Working under direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisite:* Permission of the instructor and the Department.

HIST5554   Directed Reading Course/Practicum   3 ch (3C) [W]

A detailed study of a specific historical topic. Working under the direction of a member of the Department or an associate of the Department, the student will complete directed readings, written assignments and/or practicum requirements. *Prerequisites:* permission of the instructor and the Department.

Honours Seminars

HIST5007   Gender and Sexuality in   3 ch (3S) [W]
Twentieth-Century Europe (O)

Discusses themes and theories in the history of gender and sexuality in twentieth-century Europe. Examines such topics as "deviant" sexualities at the fin-de-siècle; gender upheaval in the First World War; the "New Woman" of the 1920s; gender and race in Nazi Germany and Fascist Italy; sexual violence in war and genocide; the evolution of the homosexual rights movement; prostitution and the international sex trade; and debates over birth control and maternalism in modern society.

HIST5011   Reform and Revolt in Europe, 1500-1555 (A)   3 ch (3S) [W]

Examines the motives behind and relationships between the various movements of reform and popular revolt which convulsed Northern Europe in the sixteenth century. Topics include the learned reform proposals of Erasmus of Rotterdam, Martin Luther and Jean Calvin; the transmission of ideas in the sixteenth century; the rise of popular movements of reform; the role of women in early reform agitation; the Peasants' Revolt of 1524-26; the beliefs of the radical reformers (Anabaptists and Spiritualists) and their suppression; the rise of Catholic Counter-Reformation movements; and the political developments leading to the Peace of Augsburg in 1555. Not available for credit to students who have taken HIST 5010.

HIST5012   The Late Reformation and the Rise of   3 ch (3S) [W]
Witch-hunting in Europe, 1550-1648 (A)

Focuses on the broader effects of the European Reformation(s) upon religion, society and the beliefs and practices of people in the second half of the sixteenth century. Examines in particular the relationship between the religious changes and conflict of the Reformation and developments in the governance and regulation of religion, views about women, new ideas about science and magic, the increase in the fear of the devil, and the rise of witch-hunting. Not available for credit to students who have taken HIST 5010.

HIST5028   Fascism (A)   3 ch (3S) [W]

Examines the rise of fascist movements and the development of fascist regimes in twentieth-century Europe. Topics to be covered include: the social and cultural roots of fascism, the impact of the First World War, the

structures of dictatorship, society and culture under the fascist regimes, racial policy, foreign policy and war, and neo-fascism after 1945. While the course pays particular attention to Italian Fascism and German Nazism, other movements and regimes will be considered. Students who have taken HIST 5026 and HIST 5027 may not take this seminar for credit.

HIST5032   France in Crisis, 1930 - 1945 (O)   3 ch (3S) [W]

Examines the history of France during the "Dark Years", when the country was beset with sharp political divisions and faced Nazi invasion and occupation. Topics to be covered include: political conflict in the 1930s; explaining the defeat of 1940; the rise of the Vichy Regime and the National Revolution; collaboration with the Third Reich and the persecution of minorities; the lives of women and men under foreign occupation; the fate of the French colonial empire; the rise of the Resistance; and the Liberation of France and its aftermath.

HIST5035   The Holocaust (A)   3 ch (3S) [W]

A study of "the Final Solution to the Jewish Problem", the program of genocide developed by German National Socialists against the Jews of Europe from 1933 to 1945.

HIST5102 The Mental World of Europeans, 1300-1600 (O)   3 ch (3S) [W]

Examines the "mental world" of late medieval/early modern Europeans using the most recent research in the field. Introduces students to the latest studies of popular culture, mentalité, and the "new social history", as applied to Europe. Topics of interest include: the debate over popular vs. elite culture; the universe as conceived by both learned and unlearned; the differences between "popular" Christianity and official religion; the relationship between magic, religion and science; beliefs about illness, health and medicine; views of death and the afterlife; and others.

**HIST5103   Gender, Race and Disease in the Early   3 ch (3S) [W]
                         Modern Atlantic World (O)**

Investigates early modern gender, race and disease through the movements, interactions, and exchanges between peoples of the Atlantic World (specifically, Europe, Africa, and the Americas) during the seventeenth and eighteenth centuries. Themes include: disease and "the body"; climates and geographies of ill health; trade, empire, and disease environments; constitution, complexion and "race"; gender and sexuality.

HIST5104   Atlantic Revolutions, 1763-1848 (O)   3 ch (3S) [W]

Between 1763 and 1848 social and political upheavals - including the American Revolution, the French Revolution, the Haitian Revolution, and revolutions in the Spanish and Portuguese Empires - shook the Atlantic World. Slave revolts in the Caribbean and North America fed debates on slavery, and reformers in British North America debated local democracy and responsible government. This course focuses on the revolutions and reform movements that transformed the Americas, the imperial circumstances that engendered them, and the diverse communities and constituencies that shaped them and were in turn shaped by them: rebels and loyalists, reformers and conservatives, indigenous nations, and enslaved Africans and their descendants.

HIST5275 Health and Medicine in Early Modern England (O) 3 ch (3S) [W]

Investigates the social, intellectual, and economic dimensions of early modern English health and medicine, circa 1500-1800. Themes include: knowledge and practice; medical expertise (lay and commercial); the medical marketplace; patient-doctor relationships; the role of the hospital. Considers how factors such as age, gender, and socio-economic status, as well as family and community, shaped various aspects of health and healthcare in England from the sixteenth through eighteenth centuries.

HIST5305   Capitalism in Canada, 1763-1990   3 ch (3S) [W]

Explores the cultural, economic, and social aspects of capitalism in Canada from the 1763 Royal Proclamation to the 1990 "Oka Crisis." Topics include: settler colonial appropriation of Indigenous territories, global finance capitalism in Canada, resource extraction and development, and market cultures.

**HIST5312   Native Peoples and Canadian and   3 ch (3S) [W]
                         American State Policy, 1824-1982 (O)**

Examines the different ways in which the Canadian and American governments have attempted to deal with Native peoples living inside their borders. Particular attention is paid to the ideological underpinnings of government policy, the various legislative acts defining the relationship between the immigrant societies and Native peoples, and the responses of Native peoples to government initiatives.

**HIST5315   Working to Live and Living to Work: 3 ch (3S) [W]
                         Community, Family and Labour in Canada (O)**

Explores major themes in the formation of Canadian society through a critical examination of issues and debates around family, work and community. We review the pre-industrial, industrial, and post-Second World War periods to provide a framework for analyzing recurrent issues around labour and family life in Canada. More specifically, we consider how these historical moments were experienced by diverse groups of people living in Canada. We will work within the broader context of Canadian Studies, Social, Labour and Women's histories.

HIST5331   Film and History in Canada (O)   3 ch (3S) [W]

Examines the uses of visual history in the representation and popularization of the Canadian past. Case studies involve both documentary and feature productions from several periods in the history of Canadian film.

HIST5335   A History of the Canadian Left   3 ch (3S) [W]

A course in social, political and intellectual history examining the history of the left in Canada from the eighteenth century to the present. Topics include the origins of the radical tradition, utopian and cooperative reform, early socialism and feminism, the Communist Party, the Cooperative Commonwealth Federation, the New Democratic Party, the New Left and other alternatives.

HIST5342   Environmental History of North America (O)   3 ch (3S) [W]

Examines the interaction of the peoples of Canada and the United States with the natural environment. Topics include the theory and methodology of environmental history, changing patterns of land use, resource depletion and industrial migration, the environmental implications of urbanization, and the intellectual and institutional development of the conservation/environmental movement.

**HIST5345   Natural Resources, Industrialization and the   3 ch (3S) [W]
                         Environment in Atlantic Canada (A)**

Explores the political, economic and environmental implications of the dependence on natural resources in Atlantic Canada, through an examination of the historical development of the forest, fishing, agricultural and mining industries from the eighteenth century to the post-Second World War period.

HIST5353   Canadian Women's History (A)   3 ch (3S) [W]

This seminar is designed to encourage students to think about relevant topics and approaches to the history of women in Canada. Using both primary and secondary materials, the seminar focuses on themes drawn from the 19th and 20th century. Themes include, but are not limited to: major approaches to Canadian women's history; historiography; women's work and family lives; women and politics, migration/immigration; aboriginal women's lives; women's experiences of war; social reform movements; women in professions; women and health; feminism.

HIST5381 Health and Disease in Historical Perspective (O) 3 ch (3S) [W]

Focuses on nineteenth and twentieth century understandings of health and disease in North America. Stresses how gender, class, race/ethnicity affect historical understandings of disease.

**HIST5388   Understanding the Virtual Past;   3 ch (3S) [W]
                         Making Digital History (A)**

Introduces students to the emerging fields of digital history and virtual museum studies by combining theoretical readings with practical content on the creation and maintenance of digital archives and web design. At the end of this course students will be familiar with the ways in which historical documents, artifacts and other materials can be framed and reframed digitally to allow for new readings and interactions between them. Depending on enrolments from year to year, this course will have students digitize historical sources; create interactive websites; and prepare written assignments on the digitization process and the ways in which new media create and shape historical consciousness.

HIST5403   The Loyalists   3 ch (3S) [W]

Studies the Loyalists during the American Revolution and in exile in British North America, Great Britain, Sierra Leone, Bermuda, the Bahamas, the British West Indies and Central America. Also considers their long-term political and social role particularly in Canada, including the Loyalist myth. One week devoted to local Loyalist remains such as - houses, and museum and art gallery holdings, etc.

**HIST5445   The United States in the Progressive Era,   3 ch (3S) [W]
                         1890-1920**

Examines themes in the history of the United States at the turn of the nineteenth century, including the development of Populism, Progressivism, imperialism, anti-imperialism, and the impact of America's entry into the First World War. Explores the social, cultural, and political

consequences of industrialization and modernization. *Prerequisites:* HIST 2404 or permission of instructor.

HIST5459   Watergate: Political Scandal in Contemporary 3 ch (3S) [W] America

On June 17, 1972 five men were arrested in after they broke into the headquarters of the Democratic National Committee at the Watergate office complex in Washington D.C. The investigation that followed and the cover-up in response to it eventually brought down the presidency of Richard M. Nixon. This course examines the stories of Watergate as they evolved in the historical consciousness of Americans. Throughout the semester we will explore the various interpretations of the scandal as it unfolded, and the ways in which these interpretations have changed over the course of the 20th and 21st centuries.

HIST5465   The Cuban Missile Crisis (O)   3 ch (3S) [W]

Introduces students to some of the ways scholars have approached the [hi]stories of the Cuban Missile Crisis. Rather than concentrating solely on historical events, we will focus on questions of interpretation and methodology. The seminars will introduce students to the historiography of the missile crisis and the different interpretations historians have offered to explain what is often characterized as the most dangerous period of the Cold War. The goal is to cultivate the skills necessary to think critically about how scholars historicize the past. Students will participate in a crisis simulation.

HIST5469   The Surveillance State: 3 ch (3S) [W] A History of the National Security Agency (O)

Explores the history of the National Security Agency. The NSA is an American intelligence and counter-intelligence organization responsible for the global monitoring, collection and processing of signals intelligence (SIGINT). President Harry Truman set up the NSA in 1952. Today it is probably the largest intelligence organization in the world. However, until recently, very little was known about that organization. Indeed, until the mid 1970s very few people knew of its existence. This course will focus on how and why our understanding of the agency evolved over the last thirty years.

HIST5475   Modernist Manhattan (O)   3 ch (3S) [W]

Explores the innovations and institutions that made New York City the epicentre of North American modernism. Considers a range of cultural products and processes, including bohemianism, literary and visual culture, the cross-fertilization of "black" and "white" forms and traditions, improvisation and the jazz scene, the grounding of critical authority, the politics of authenticity, and the interplay between the avant-garde and the popular.

HIST5555   Directed Research Seminar (O)   3 ch (3S) [W]

This Honours Seminar provides an in-depth introduction to primary source research in a field of history using a body of documents from the professor's area of specialization and of his or her choosing.

HIST5605   Freedom on Trial: 3 ch (3S) [W] Slavery, Violence, and the Law (O)

This course explores histories of slavery and the law throughout the Caribbean and North America from European conquest in the fifteenth and sixteenth centuries to the abolition of slavery in the nineteenth century. We will read primary sources, including slave laws, trial transcripts, treatises, and first-person narratives. Topics include: indigenous forced labour regimes; slave laws; crime and punishment; manumission; the legal position of free persons of African descent; abolition and the meaning of freedom; the transatlantic slave trade and international law; and the origins of human rights.

HIST5606   The African Diaspora and the Atlantic World,   3 ch (3S) [W] 1492-present (O)

What is the African Diaspora? What is the Atlantic World? How do these approaches to the histories of colonialism, slavery, and trade complement and/or differ from each other? Is the Black Atlantic synonymous with the African Diaspora? This Honours seminar will engage with critiques of the concepts of the 'Atlantic World' and 'Black Atlantic' and question whether such terms are useful in conceptualizing blackness in transnational and global terms. The course will introduce students to thinking about the relationship between historiography on the one hand, and the context for the production of that historiography: 20th- and 21st-century political struggles and the race, class, and gender transformations of academia.

HIST5607   The Haitian Revolution (O)   3 ch (3S) [W]

This honours examines the Haitian (Saint Domingue) Revolution (1791-1804), the largest and arguably only successful anti-colonial slave rebellion in the western hemisphere, which transformed the French Colony of Saint Domingue, the richest colony in the Caribbean, into the independent state of Haiti. It places the Haitian Revolution within the "Age of Revolutions"(1776-1848), while re-centering it within its own narrative,

not as an echo of those that preceded it. By reading a combination of primary and secondary sources, we will trace how the revolution unfolded and the ideologies that inspired it, including anti-colonialism, anti-slavery, democracy, freedom, and university of human rights. This course will explore this enormously complex event, its powerful impact on the modern world, including Latin America, the US, France, and Britain, and its place in modern historical memory.

HIST5608   Histories of Madness (O)   3 ch (3S) [W]

Explores histories of madness in a global perspective from early modern madhouses to present day mass incarceration. Madness is a universal feature of human history; every society, past and present, has addressed it. And yet it remains one of the most stigmatizing forms of illness and disability. The course considers both the great range of ideas about madness and efforts to treat and contain it in various historical contexts. Students approach histories of madness from a critical disability perspective to include the experiences of people deemed 'mad.' Histories of madness are examined in relation to histories of race, gender, class, and disability, as well as medicine, science, religion, and capitalism. Topics include community and grassroots understandings of madness, madhouses, asylums and institutional treatment, psychiatric care and rehabilitation, addiction and recovery, advocacy, activism, and rights.

HIST5702   Histories of Art, Place, and Popular Culture (O) 3 ch (3S) [W]

Examines the interconnected histories of place, artistic practice, and popular resistance. Focusses on rural, poor, and racialized experiences of place and popular culture, to centre the ways in which resistant populations across the globe have used art and culture to critique and resist capitalism, war and violence, colonialism, and heterosexism, and to foreground ecological, feminist, queer, Indigenous, Black, and racialized creative practice according to their site-specific contexts. Explores everyday intersections and solidarities across varied popular resistances and historical periods.

HIST5725   Colonialism on Display (O)   3 ch (3S) [W]

Traces colonial histories of display and representation by entering the experiences of Indigenous, Black, and racialized individuals and communities. Critiques the racist colonial histories of European and European-descendant collecting practices, such as "cabinets of curiosities," public museums, world's fairs, art galleries, and educational and scientific venues, moving to more contemporary contexts that include ethnographic film and internet culture. Focuses on creative strategies of anti-colonial and decolonial resistance in the work of artists, curators, museum professionals, and filmmakers.

HIST5803   The First World War (O)   3 ch (3S) [W]

Reviews the key points of controversy surrounding the origins, personalities and conduct of the war on the Western Front. Particular attention will be paid to the role of the British Expeditionary Force, of which the Canadian Expeditionary Force was an increasingly important part.

HIST5804   The Second World War (A)   3 ch (3S) [W]

Examines key events and issues of the military campaigns of the Second World War, and wrestles with how historians and writers of memoirs have portrayed them. Provides a survey of the major historical problems surrounding the conduct of the war, including: the collapse of the West, the German invasion of Russia, the Japanese attack on Pearl Harbour, area bombing, Normandy, and the bombing of Hiroshima and Nagasaki.

HIST5805   Seapower   3 ch (3S) [W]

Themes in naval history. Uses selected problems to explore the role of naval power in shaping the modern world

HIST5815   The Study of War since 1945 (A)   3 ch (3S) [W]

Examines the conduct of war since 1945 through an exploration of the literature on war in theory and practice. Course will focus on the interaction of strategic theory and doctrine, technology, and society in conventional and revolutionary war.

HIST5901   The Nature of History   3 ch (3S) [W]

This course is compulsory for third-year Single Honours students. It introduces them to the nature of historical discipline, examining the evolution of historical writing and method, research skills and techniques, questions relating to the philosophy of history and the application of history in the community. Normally open to History Honours students only. Not available for credit to students who have completed HIST 5900.

HIST5915   Fourth-Year Advanced Seminar   3 ch (3S) [W]

The advanced seminar allows select students to participate in one of the seminars offered by History graduate students for Honours credit. Normally open to History Honours students in the final year of their studies with the approval of the course instructor and the Department.

HIST5920   **Honours Thesis**   **6 ch (R) [W]**

A reading and research course open to exceptional Honours students in their fourth year which should be used to produce an Honours Thesis. Permission to take this course must be sought from the professor in the desired field and the project must be approved by the Department. This course may be used as an alternative to a seminar in the fourth year. It requires a CGPA of at least 3.6 in History courses for admission.

INTERNATIONAL DEVELOPMENT STUDIES

See beginning of Section H for abbreviations, course numbers and coding.

IDS1103 **Introduction to Development Studies: Global** **3 ch (3C) [W]**
    Perspectives on Human Inequality

Poverty, inequality and injustice are presistant features on our world. This foundational course sets out to answer the following questions: How did things get this way? What has been done about it? And, what progress is being made? As these questions are explored we survey many of the salient issues in the field of international development studies including climate change, war, debt, global trade rulers, foreign aid, hunger and malnutrition, habitat destruction, rural and urban livlihoods, and population growth. Students cannot obtain credit for more than one of the following: IDS 1103, IDS 2003, or IDS 2001.

IDS2103 **Institutions, Practices, and Perspectives on** **3 ch (3C) [W]**
    International Development

This course is a sequel to IDS 1103. It explores *i)* how actors including international organizations, states, non-governmental organizations, and community-based groups have struggled to achieve greater economic and social justice *ii)* how social scientists, development practitioners, and community activists have assessed the key practices and debated the key theories of international development. Students cannot obtain credit for more than one of the following: IDS 2103, IDS 3002 or IDS 3003.

IDS3903   **Independent Study in**   **3 ch (R) [W]**
   International Development Studies

Upon application through the Co-ordinator of the International Development Studies program, students in IDS may undertake independent studies with a faculty member of the program. It is expected that students will have a clear idea of their intended area of study and must submit a written proposal justifying it as an independent studies course. No student will be allowed to take more than 3 ch of independent study in completing the IDS requirements for a Joint Honours or Double Major program. Independent studies courses will not count as meeting the Honours thesis requirements.

IDS4003 **International Development Studies Practicum** **3 ch**

This course integrates learning with a community based service project on an overseas international development initiative. The aim is to enrich students' education by providing a unique opportunity for acquiring first-hand skills and experiences. Students must consult with the IDS Co-ordinator to develop their Practicum prior to registration. The course is graded on a Credit/No Credit basis. *Prerequisite*: Any one of the following: IDS 1103, IDS 2003, IDS 2103, IDS 3003 or permission from the instructor.

IDS4103   **Advanced Topics in**   **3 ch (3S) [W]**
   International Development Studies

This course explores evolving perspective and schools of thought in the field of International Development Studies ranging from earlier modernization theory through to recent 'grassroots postmodernism.' Specific subjects covered may include the movement of peoples, the legacy of failed states and protracted regional conflicts, agrarian transformation, and the impact of infra-structural projects, the question of sustainable development, global development organizations, and political resistance. *Prerequisite:* Any one of the following: IDS 2103, IDS 3002, IDS 3003, or permission from the instructor.

IDS4203   **Development Project Design**   **3 ch (3S) [W]**

This course considers the practical and transferable management skills necessary to plan, implement, monitor and evaluate development projects, using group discussions, realistic project scenarios, and exercise simulations. *Prerequisites:* Any one of the following: IDS 2103, IDS 3002, IDS 3003, or permission from the instructor.

IDS4900 Honours Thesis in International Development Studies 6 ch R [W]

This course is compulsory for Honours students. The student conducts an independent research project on an important issue concerning international development studies under the direction of a member of the IDS program. *Prerequisite:* Any one of the following: IDS 2103, IDS 3002, IDS 3003, or permission from the instructor.

JAPANESE

Courses in Japanese Language are offered at the Introductory Level and occasionally at the Intermediate Level if resources are available.
See beginning of Section H for abbreviations, course numbers and coding.

JPNS1013   **Introductory Japanese I**   **3 ch (3C)**

Focuses on the fundamental structure of Japanese and practicing of communication skills. Introduces Hiragan and Katakana, writing systems in Japanese, and practice of reading and writing. Some aspects of Japanese culture are discussed. Not open to native speakers.

JPNS1023   **Introductory Japanese II**   **3 ch (3C)**

Continuation of JPNS1013. Focuses on communicative aspects as well as practice of reading and writing in Hiragana. Katakana and basic Kanji, the other writing system in Japanese, are introduced. Not open to native speakers.

JPNS2013   **Intermediate Japanese I**   **3 ch (3C)**

Develops the communicative skills necessary for a wide range of everyday situations. Focuses on both conversation and writing systems, developing vocabulary and sentence structures. One hundred Kanji characters are introduced and practiced. *Prerequisites:* JPNS 1013 and JPNS 1023.

JPNS2023   **Intermediate Japanese II**   **3 ch (3C)**

Continuation of JPNS 2013. The textbook "Genki I" is completed with this course, and students reach the level of Level IV Japanese Proficiency Test. *Prerequisite:* JPNS 2013.

KINESIOLOGY

See beginning of Section H for abbreviations, course numbers and coding.
General Information
KIN 1001 is considered to be a prerequisite or co-requisites to all other Kinesiology (KIN) and Recreation (RSS) courses for students enrolled in one of the degree programs offered by the Faculty of Kinesiology. Recreation and Sports Studies (RSS) courses are grouped together and listed in their own section of this calendar.
Unless otherwise stated, prerequisite shall mean a D or better in the prerequisite course.
NOTE: See Standard Courses Abbreviations for abbreviations, course numbers and coding.
POLICY ON NON-FACULTY OF KINESIOLOGY STUDENTS TAKING KIN AND/ OR RSS COURSES
Due to the extensive number of KIN and RSS courses full with a waitlist, and to the highly competitive nature of upper-year admissions, the number of KIN and RSS credit hours that a student not registered in a degree program offered by the Faculty of Kinesiology may register for is limited. Students not registered in a degree program offered by the Faculty of Kinesiology, and wishing to register for KIN and/or RSS courses shall be governed by the following:
1. A student not registered in a degree program offered by the Faculty of Kinesiology must have permission of the course instructor to register in any KIN and RSS course.
2. Normally, all students must have successfully completed all required *Prerequisites* to a KIN or RSS course prior to admission to KIN and RSS courses. Waiver of *Prerequisites* is permissible only with consent of the Instructor.
3. In all KIN and RSS courses students registered in a degree program offered by the Faculty of Kinesiology will be given priority.
4. Normally, KIN 1001 shall be restricted to students in the degree programs offered by the Faculty of Kinesiology.
5. Normally, KIN 1001 is the *Prerequisites* to all 2000, 3000 and 4000 level KIN and RSS courses.
6. Normally, students not registered in a degree program offered by the Faculty of Kinesiology shall be limited to twelve (12) credit hours of KIN/RSS courses.

KIN1001   **Introduction to Kinesiology**   **4 ch (3C 1T) [W]**

This course is designed as a thematic introduction to the academic discipline of Kinesiology. The course surveys the basic concepts, theories and analytical methods of Kinesiology and their application to the study of human movement in recreation, sport, exercise and physical activity. Weekly sessions include three lectures and one tutorial. KIN 1001 is restricted to students registered in the Faculty of Kinesiology.

KIN1160   **Laboratory Methods in Kinesiology**   **4 ch (2C 2L)**

This laboratory based course introduces the student to the basic laboratory techniques and methods for the collection of kinesiological data. Experience will be gained through a series of laboratory sessions in each of the exercise science disciplines (motor control, exercise physiology, biomechanics, and sport psychology). Instruction pertaining to

the application of the introduced techniques will accompany each laboratory session.

KIN2032   **Introduction to Sport and Leisure Psychology**   **3 ch (3C)**

Provides an introduction into the psychological influence of sport, physical activity, and leisure on the individual. Current social psychological theory about sport, physical activity and leisure behaviour will be examined through a wide variety of sport, leisure, and exercise psychology topics.

KIN2051   **Prevention and Care of Athletic Injuries**   **4 ch (3C 1.5L)**

Covers principles and procedures for the recognition and management of injuries and disorders in physical activity, athletics and sport programs. *Prerequisite* or *Co-requisite*: BIOL 1711.

KIN2062   **Introductory Biomechanics**   **3 ch (3C)**

This is an introductory course covering the anatomical factors and physical laws that govern human movement. The course focuses on quantitative techniques for analysis of full-body and multi-segment human motions, and the force systems that cause and resist these motions. Students will gain the necessary background and skills for understanding and applying biomechanical concepts in practice, by developing the skills required to translate problems in human movement into a biomechanical framework for quantitative analysis, and applying biomechanical concepts to solve problems in the rehabilitation and sport sciences. *Prerequisites:* BIOL 1711 and MATH 1003 and MATH 1503.

KIN2072   **Introduction to Motor Control and Learning**   **3 ch (3C)**

Introduces the student to the principles of motor skill acquisition and performance as well as the conditions that influence these processes. Topics include information processing, attention, perception, decision-making, motor programs, and feedback. The role of motivation, anxiety, concentration, observational learning and mental practice in motor performance and learning will be examined. Practical applications for sport, physical activity, industry, and the performing arts will be discussed. Lectures only.

KIN2082   **Introductory Exercise Physiology**   **3 ch (3C)**

This is a course in applied human physiology that focuses on developing a conceptual model to explain how the nervous, muscular, metabolic and cardiorespiratory systems function together to allow human movement. In this course the student will examine the cellular and systemic changes that take place within the body during the performance of physical work in a variety of modalities, intensities and durations. *Prerequisite:* C grade or better in BIOL 2721 Human Physiology II. **NOTE**: Credit will not be given for both KIN 2082 and KIN 3081.

KIN2093   **Introduction to Philosophy of Kinesiology**   **3 ch (3C) [W]**

This course will conduct a philosophical analysis in to the nature of sport, exercise, and recreation by asking questions about the fundamental value and purpose of these activities. *Prerequisite:* KIN 1001 or consent of the instructor.

KIN2252   **Functional Human Anatomy**   **4 ch (3C 1L)**

This course is designed to introduce the concepts of functional human anatomy with a focus on how the anatomy interacts and supports various human movements. Practical movement assessment skills are taught, such as: anatomical movement assessments, postural assessment, muscle length and strength testing and movement screening. *Prerequisites:* C grade or better in BIOL 1711.

KIN3001   **Introduction to Research Methods in Kinesiology**   **3 ch (3C)**

Introduces basic concepts in research methods and experimental design relevant to the area of kinesiology including recreation and leisure studies. It is also designed to create a better understanding of the principles, concepts, terminology, and instruments used in measurement and analysis in the various sub-domains of kinesiology. The course will focus on the scientific method, with both quantitative and qualitative research being discussed. Topics include: different methods of knowledge, strategies of discovery, ethical issues, observation (systematic and self-report observational methods), measurement (reliability, validity, objectivity), experimental design (randomized and non-randomized designs, survey design and subject selection), and data analysis (descriptive and inferential statistics). Finally, research reporting and the A.P.A. format will also be examined. *Prerequisite:* STAT 2263 or STAT 2264 or equivalent.

KIN3031   **Exercise Psychology**   **3 ch (3C)**

An introduction to the study of behaviour in the exercise environment. The course will focus on how psychological factors effect physical performance, how exercise effects psychological development, and on the development of strategies to encourage exercise participation. *Prerequisite:* KIN 2032 or consent of instructor.

KIN3032   **Sports Psychology**   **3 ch (3C) [W]**

Examines how the principles of psychology are applied in the sport setting to enhance performance. Involves an analysis of the current findings in psychological research into sport with special attention to personality theory, imagery, goal setting, cohesiveness, and spectator behaviour. The course will be based on theoretical considerations and will involve a practical component. *Prerequisite:* KIN 2032 or consent of the instructor.

KIN3041   **Disability Awareness**   **3 ch (3C)**

This course aims to introduce students to the issues and challenges faced by persons with disabilities by exploring: disability concepts from a social, medical and political perspective; the impacts of disability on the person, family unit and labor force; disability issues in movement activities, from daily living to sport and recreation skills. Disability awareness training includes an introduction to appropriate terminology, knowledge of specific disorders that cause disability, and experience working with disabled individuals in the community.

KIN3061   **Advanced Biomechanics**   **3 ch (3C)**

Examines, through lecture and the use of lab-based data, the theoretical and applied aspects of the biomechanics of human performance. *Prerequisite:* C grade or better in KIN 2062.

KIN3082   **Advanced Exercise Physiology (A)**   **3 ch (3C) [W]**

Through lecture and course assignments, the adaptive responses of the physiological systems to exercise will be studied through an integrative physiological lens. The specific topics of adaptation to various means of endurance and resistance training programs will be examined. *Prerequisite:* KIN 2082 or equivalent.

KIN3092   **Sport, Animals, and Ethics**   **3 ch (3C)**

This seminar will explores the roles and relationships of humans and animals involved in sport, leisure and recreation, through an ethical lens. Sport, Animals, and Ethics will examine the morality of humans' treatment of nonhuman animals in a variety of environments. The course begins with a survey of contemporary moral theories. We will examine questions about the realtionships we have with animals, including the moral obligations humans may have towards animals, and the moral status of animals. We will explore the standing of animals in myriad of circumstances including their involvement in pursuits such as horse and greyhound racing, 'sport' hunting, fighting, fly-ball, fishing, and other settings such as circuses, marine parks, shows, and zoos.

KIN3093   **Ethics and Kinesiology**   **3 ch (3C) [W]**

This course examines the fundamental principles of ethics, and their application to selected ethical issues in sport, recreation, exercise and other dimensions within kinesiology. Through intensive reading, open dialogue, critical reflection, and writing, students will be challenged to develop their philosophic ability, knowledge, and skills in evaluating an ethical dimension of relevant issues. *Prerequisite:* Students must have completed at least 27 credit hours of their degree program.

KIN3131 **Psychological Intervention in Sport and Exercise (A)** **3 ch (3C)**

Introduction to psychological consulting in the areas of sport and exercise. The course will provide the student with the basic knowledge needed to develop mental skills training programs and will introduce practitioner-athlete consulting process. *Prerequisite:* KIN 2032, KIN 3032, or KIN 3031, or consent of instructor.

KIN3161   **Human Factors in Ergonomic Design**   **3 ch (3C) [W]**

This course introduces the physical, biomechanical, psycho-social and cognitive demands on workers in both office and industrial settings. Through lectures, student projects and review of current research, the role of proper human factors as a component of the improvement of health and well-being of the worker are explored. The understanding of human physical and psychological capabilities and limitations are incorporated in proper ergonomic design of the workplace environment.

KIN3166   **Cognitive Aspects of Human Performance**   **3 ch (3C)**

This course will examine the cognitive processes that underlay human performance. Mental processes such as perception, attention, memory, information processing, decision-making, and response execution will be examined as they relate to human motor performance. The effects of these cognitive factors on performance will be examined in a variety of settings including the workplace, sport, exercise and activities of daily living. A particular emphasis will be on how to improve human performance based on the cognitive factors examined in the course. *Prerequisite*: KIN 2072 or permission of instructor. *Co-requisite*: KIN 3001 or permission of the instructor.

KIN3201   **Exercise Prescription**   **4 ch (2C 2L)**

A basic exercise prescription course applying concepts obtained in introductory kinesiology courses to ask, assess, advise, agree and assist

active or inactive clients for acquisition of health and well-being outcomes across all ages. This course will use guiding principles of exercise prescription through the application of movement, exercise, and programming for health. *Prerequisites:* C grade or better in KIN 2032, KIN 2062, KIN 2072, and KIN 2082 and KIN 2252.

KIN3202   **Mindfulness and Health**   **3 ch (3C) [W]**

This course introduces students to the philosophical and historical foundations of mindfulness theory and practice. It will focus on principles and practices of mindfulness and the mind-body connection to health through a secular, evidence-based approach. The course will investigate current trends in mindfulness including its reach within a variety of settings, most specifically as it pertains to health. It incorporates theory, stillness, movement, reflection, meditation, and focused attention. Students will participate in mindful practices - techniques and practices designed to concentrate and focus the mind - to better understand the concept and application of mindfulness to their own health and wellbeing.

KIN3282   **Physical Activity and Public Health**   **3 ch (3C)**

Provides an understanding of how physical activity and major diseases, disabilities, public health, and decision maker. This will be accomplished through summarizing and critically assessing the epidemiological evidence of physical activity and exercise and chronic diseases. *Prerequisites:* C grade or better in KIN 3001.

KIN3291   **Coaching Healthy Behaviours**   **3 ch (3C)**

This course will examine individuals' attitudes and behaviours towards healthy and active living, with a focus on individual health-related behaviour change. Techniques for identifying strategies and overcoming barriers to changing health behaviours will be examined, developed and practiced within the framework of health education and behaviour change. Course participants will be challenged and empowered to make their own positive lifestyle changes in regards to healthy behaviours, and will be prepared to begin working with others in this realm. *Prerequisite:* RSS 1081 or permission of the instructor.

KIN3382   **Pediatric Exercise Science (O)**   **3 ch (3C) [W]**

To develop an understanding of the physiological, medical, and physical performance implications associated with changing activity patterns in today's youth. Examines the influence of physical activity on normal growth and development, exercise and fitness related secular trends, issues related to pediatric exercise science, and activity program development. *Prerequisite:* BIOL 2721.

KIN3481   **Nutrition for Healthy Living**   **3 ch (3C)**

The science of the nutrients and their role in the body and in health, factors influencing food intake, dietary assessment and guidance, nutrition and physical activity, and current nutrition issues. **NOTE**: Credit will not be given for both ED 4791 and KIN 3481.

KIN3482   **Bioenergetics of Exercise**   **3 ch (3C)**

An in-depth integrative and applied study of the conversion of carbohydrates, fats, and proteins into biologically useable forms of energy. Topics include: basic chemistry and biochemistry involved in the process, the biochemical pathways, the metabolic responses to energies and exercise, and the neuroendocrine regulation of exercise metabolism. *Prerequisite:* KIN 2082 or equivalent.

KIN3911/3912/3913   **Practicum I 1 ch (1L) / 2ch (2L) / 3 ch (3L)**

Relates theory to practice through professional career and field experiences. Faculty approval is required prior to any service commitment or registration procedures. *Prerequisites:* must have completed 48 ch and have an AGPA of at least 2.5.

KIN3914   **Practicum II**   **3 ch (3L)**

Relates theory to practice through professional career and field experiences. Faculty approval is required prior to any service commitment or registration procedures. *Prerequisite:* Must have completed 48 ch and have an AGPA of at least 2.5.

KIN3950   **Athletic Therapy Practicum**   **6 ch (6C/L) [W]**

Involves Athletic Therapy internships only. Relates theory to practice through professional career and field experiences. Faculty approval is required prior to any service commitment or registration procedures. *Prerequisites:* B grade or better in KIN 2051 and permission of the instructor.

KIN4041   **Movement Disorders**   **3 ch (3C) (A)**

This course introduces students to the biomechanics of movement disorders using state-of-the-art techniques in motion analysis. Topics include instrumentation, clinical gait analysis, data interpretation, and treatment effectiveness. *Prerequisite:* KIN 3061; Only open to students with 57 ch towards their degree.

KIN4063 Biomechanical Instrumentation and Data Acquisition 3 ch (3C) (A)

Introduces advanced concepts in instrumentation and data acquisition relevant to the area of human motion analysis. The student will be introduced to motion analysis systems, electromyographs, and force platforms through laboratory sessions. Emphasis will be placed on accuracy and reliability of equipment. Students will also be introduced to the Matlab programming language and various data analysis techniques in biomechanics (i.e. filtering, joint angle computation). *Prerequisite:* KIN 3061; Only open to students with 57 ch towards their degree.

KIN4065   **Matlab and Biomechanics**   **3 ch (1C 2L)**

This course introduces students to the Matlab programming language with specific applications to the field of biomechanics. Topics include vector manipulations, joint angle computations, and matrix mathematics. All lectures are conducted in computer labs using the Matlab software. Matlab is a popular language used in academia and various industrial applications. Students will learn how to create computer programs that perform mathematical operations and analysis using biomechanical data. *Prerequisite:* KIN 3061, MATH 1503, or permission of the instructor.

KIN4072   **Neural Control of Human Movement (A)**   **3 ch (3C)**

The aim of this course is to provide the student with a fundamental understanding of the neural processes that underlie the control of voluntary action. The mechanism, structure and function of the human nervous system will be presented at various levels of analysis, from the cellular level to the behavioural level. Specific topics to be addressed include the mechanism of information transmission; the mechanism of skeletal muscle contraction; the use of surface electromyograms; mechanisms of excitatory and inhibitory control, reflexes; pre-programmed reactions; simple brain anatomy, structures and pathways; postural control, locomotive control and single and multi-joint movements. *Prerequisites:* KIN 2072 and KIN 2082.

KIN4073   **Biomechanics of Sport and Exercise**   **4 ch (2C 2L)**

Examines the biomechanics of human movement in the context of sport and exercise (e.g., running, jumping, cycling, gym-based exercises). Lab experiences will use qualitative and quantitative techniques to examine sport and exercise movement patterns. Knowledge will be appied and demonstrated through an opportunity to analyze a sport or exercise of choice. *Prerequisite:* KIN 2062.

KIN4074   **Human Gait and Balance**   **3 ch (3L)**

Provides a detailed understanding of the biomechanics and motor control of standing posture, stepping, walking, and running under normal and perturbed conditions. Measurement techniques, processing data, and the interpretation of total body and limb synergies will be emphasized from a biomechanical and neural control perspective. The problems of the elderly and the assessment of those with pathologies will also be examined. *Prerequisites*: KIN 2072 and KIN 2062.

KIN4093   **Seminar on Health Care Ethics**   **3 ch (3C) [W]**

This course will explore the area of health care. Through intensive reading, open dialogue, and critical reflection, students will be challenged to develop knowledge and skills in analyzing the dimensions of health and health care. *Prerequisite:* KIN 3093 or consent of the instructor.

KIN4161   **Occupational Biomechanics**   **3 ch (3C) [W]**

Explore biomechanical models of injury to assess the physical demands on the human body imposed by work activities. Learn to bridge theoretical knowledge related to the mechanism of injury using assessment tools to identify upper extremity and low back musculoskeletal injury risk in both office and industrial work settings. Integrate kinesiological knowledge of human capabilities and limitations to develop ergonomic strategies to mitigate these musculoskeletal risks. This course is a self-directed online course. *Prerequisite:* Completion of 96 ch in Kinesiology, KIN 2062 or consent of the instructor.

KIN4162   **Occupational Health and Safety for Ergonomists**   **3 ch (3C)**

This course will provide an overview of the occupational health and safety field and its relationship to workplace ergonomics. An introduction to occupational health and safety legislation will be provided and health and safety hazards in a variety of work environments will be examined. Emphasis will be placed on how to eliminate and reduce hazards and risks associated with several work processes, including the physical working environment, adaptation of tools and the workplace to the worker, and equipment design. The roles and responsibilities of workers and their employers will also be covered. *Prerequisite:* KIN 3161. Credit will not be given for KIN 4162 and ME 5283.

KIN4163   **Workplace Ergonomic Design and Analysis**   **3 ch (3C)**

The focus of this course is on the theoretical background and practical knowledge required to create functional ergonomic designs and provide comprehensive ergonomic analyses of industrial or service workplaces

using work measurement and task analysis methodologies. Industrial and human factors engineering techniques together with the principles of occupational biomechanics are applied to investigate human / machine interactions, job design, and workstation layout. Work Measurement and Task Analysis methodologies are used to describe and determine work standards, physiological task loads and the elements of manual and mental activities in human / machine work systems. Laboratory exercises provide the opportunity to apply the theory to actual workplace situations. *Prerequisite:* Completion of 96 ch in Kinesiology / Engineering, KIN 3161, or consent of instructor.

KIN4165   **Occupational Physiology**   **3 ch (3C) (A)**

This course will investigate issues related to the physical requirements, program design, the measurement of physical demands, and factors related to fatigue and injury in the workplace from a physiological perspective. It will also examine issues related to safety and completion of job specific tasks in the workplace. The standards and job requirements for an occupation will be examined using the "Bona Fide Occupational Requirements (BFOR)". *Prerequisite:* Completion of 96 ch in Kinesiology, KIN 2082, or consent of the instructor.

KIN4252   **Advanced Functional Anatomy**   **4 ch (3C 1L)**

This course is designed to build upon the concepts and theories learned in Kin 3252 - Functional Human Anatomy, with a focus on mastery of hands-on assessment techniques and methodologies, assessment interpretation techniques, identification of movement impairments, and the development of appropriate movement correction exercise intervention programs based upon the interpretations of the assessments. This course will focus on the application of advanced theories of anatomical systemic integration. *Prerequisite*: KIN 2252.

KIN4281 Measurement and Evaluation in Exercise Science 4 ch (1C 3L)

An advanced course examining the theory and developing practical skills for measuring body composition and cardiovascular, neuromuscular, and metabolic function during exercise. Students will learn about the equipment commonly used in Exercise Science and the principles of using these instruments including the influence of calibration and signal processing amplification, filtering and sampling. They will also learn computer based data acquisition, the pros and cons of various measurement approaches, and gain experience in screening subjects for exercise testing, data analysis and interpretation of test results. *Prerequisite:* Minimum grade of "C" in KIN 2082.

KIN4282   **Advanced Exercise Prescription for**   **4 ch (3C 1.5L)**
                        High Performance

A combination of advanced theory and practical experience, in the areas of periodization, exercise program design, and advanced training methods will be studied. Upon completion of this course, students will be able to develop strength and conditioning programs for high performance individuals such as athletes, or highly physical occupations. *Prerequisite*: KIN 3201.

KIN4284   **Instrumentation in Exercise Physiology**   **3 ch (3L)**

Introduces the concepts, methodologies and analysis techniques used in exercise physiology to allow for the assessment of human physiological capacity and performance. Students will be introduced to metabolic capacity, body composition, measures of force and power, electromyography, electrocardiography, and anaerobic performance measurement techniques. Students will learn the techniques to allow for the analysis of the data obtained through these instruments. *Prerequisite*: KIN 3201. Credit cannot be received for KIN 4281, KIN 4284, and KIN 5281.

KIN4292   **Behavioural Change Interventions**   **3 ch (3L)**
Develop a detailed understanding of how to support people to engage in behaviours which, over time, have positive effects on them, their social networks and society in general. The focus is on 'normal' behaviour of everyday living. Examine the theoretical foundations that explain behaviour and behaviour change, the methods by which change can be supported and the practical contexts where behaviour change interventions can be applied to support change. *Prerequisite:* KIN 1001 or permission of the instructor.

KIN4383   **Physical Activity and Aging**   **3 ch (3C)**

The study of the aging processes and the effects of exercise and lifestyle factors on the health and fitness of the aging adult. Students will receive theoretical knowledge and will apply that knowledge to real life situations. Students will learn common fitness tests for older adults and will test and interpret fitness levels of older adults. *Prerequisite:* KIN 2082.

KIN4481   **Exercise and Sport Nutrition**   **3 ch (3C) (A)**

An in-depth examination of the role which nutrition plays (especially ergogenic aids) in exercise and sport performance. Approached from an

applied biochemistry and physiology perspective through lecture and seminar. *Co-* or *Prerequisite:* KIN 2082 or equivalent.

KIN4800   **Directed Studies in Kinesiology**   **6 ch (6C)**

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Kinesiology that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BScKin degree.

KIN4900   **Honours Research Project**   **6 ch (3C)**

BScKin Honours students must complete a research project under the supervision of a faculty member. The project can take the form of a thesis, report, or case study as determined by the faculty member. A presentation is required. *Prerequisite:* Students must be accepted into the BScKin Honours program (see Honours program degree requirements).

KIN4903   **Directed Studies in Kinesiology**   **3 ch**

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Kinesiology that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BScKin degree.

KIN4904   **Directed Studies in Kinesiology**   **3 ch**

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Kinesiology that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BScKin degree.

KIN4910   **Advanced Practicum**   **6 ch (6C/L)**

Continuation of KIN 3913/KIN 3914. *Prerequisites:* Must have completed 48 ch and have an AGPA of at least 2.5.

KIN4950   **Advanced Athletic Therapy Practicum**   **6 ch (6C/L) [W]**

Prerequisite: KIN 3950.

KIN4993   **Selected Topics in Kinesiology**   **3 ch**

Selected topics of special interest from the area of kinesiology are examined in detail. Special emphasis will be placed on current issues. Topics will be specified by the Faculty. Title of topic chosen will appear on the student's transcripts. Open only to students who have completed 57 ch or more.

KIN4994   **Selected Topics in Kinesiology**   **3 ch**

Selected topics of special interest from the area of kinesiology are examined in detail. Special emphasis will be placed on current issues. Topics will be specified by the Faculty. Title of topic chosen will appear on the student's transcripts. Open only to students who have completed 57 ch or more.

KIN5031   **Applied Sports Psychology**   **3 ch (3C) [W] (A)**

This course will focus on psychological skills and methods in sport and exercise, and how sport psychologists, coaches, therapists, and athletics use these skills and methods to positively affect sport participation, performance, motivation, and enjoyment. More specifically, the psychology skills and methods which were presented and discussed in KIN 2032, 3031, 3032, and 3131 will be applied in the sport setting. This will involve working with a team, teaching mental skills in group sessions, and being available for individual consultations. *Prerequisites:* KIN 2032, KIN 3032, KIN 3131, KIN 3031.

KIN5032 Research in Sport and Exercise Psychology (A) 3 ch (3C) [W]

Designed to permit analysis and discussion of theoretical developments and recent research findings in the areas of sport and exercise psychology. The seminar format will allow students to critically appraise research and permit them to express their own ideas. Recent research articles will provide the basis for discussion and presentations. *Prerequisites:* KIN 2032 and KIN 3131, KIN 3032 or KIN 3031 or consent of instructor.

KIN5072   **Advanced Motor Control and Learning (A)**   **4 ch (3C 2L)**

The aim of this course is to explore concepts of information processing within motor control. Each week specific attention will be paid to a seminal paper on this topic. Issues that arise for motor control from these papers will be presented and discussed in seminar format. To gain a practical understanding of these issues, the student will undertake and write-up a series of laboratory experiments on these aforementioned papers.

Prerequisites: KIN 2072 and KIN 3001 and STAT 2263 or STAT 2264 or equivalent.

KIN5481   **Advanced Exercise Prescription for**   **4 ch (3C 2L)**
Chronic Diseases

Advanced theoretical knowledge and experiential learning related to physical activity, fitness, and lifestyle assessment, counselling, and exercise prescription for people living with chronic condition. This course prepares students for certification as a Certified Exercise Physiologist (CEP) by the Canadian Society for Exercise Physiology. *Prerequisite:* KIN 4281 or KIN 3201.

LATIN

See beginning of Section H for abbreviations, course numbers and coding.

LAT1103   **Introductory Latin I**   **3 ch (3C)**

An introduction to the Classical Latin language spoken and written by Ancient Romans. This introduction presupposes no previous knowledge of the language, and students should be aware that this course is conducted in English.

LAT1113   **Introductory Latin II**   **3 ch (3C)**

A continuation of the introduction to Classical Latin. *Prerequisite:* LAT 1103 or equivalent.

LAT2105   **Intermediate Latin**   **3 ch (3C)**

An intensive intermediate course in Classical Latin language designed to prepare the successful student for the reading of Latin texts from classical literature. *Prerequisite:* LAT 1123 or equivalent.

LAT3105   **Beginning Classical Latin Reading**   **3 ch (3C)**

This course is intended for students who wish to continue the study of Latin to the Advanced level. *Prerequisite:* LAT 2105 or equivalent.

LAT3113   **Reading Classical Latin Authors I**   **3 ch (3C)**

A reading course designed to strengthen skills in the reading of Classical Latin texts. *Prerequisite:* LAT 3105 or equivalent.

LAT3123   **Reading Classical Latin Authors II**   **3 ch (3C)**
N/A

LAT3133   **Advanced Latin I**   **3 ch (3C)**
N/A

LAT3143   **Advanced Latin II**   **3 ch (3C)**
N/A

LAT3153   **Directed Reading in Latin**   **3 ch**

By arrangement with the department, students who have completed LAT 3103 and an additional 12 ch of advanced courses in Latin may register for this course after consulting with the directing Faculty Member on the selections to be read.

LAW IN SOCIETY

See beginning of Section H for abbreviations, course numbers and coding.

LWSO2003   **Law and Society**   **3 ch**

Introduction to the Canadian legal system and the role of law in organizing social relations and structure. The course surveys the foundation, forms and functions of legal institution, the law-making process, and actors in the legal system. Theoretical perspectives on the role of law in society are introduced through discussion of contemporary issues. Exclusion: Students who have taken LWSO 4003 before September 2018 will not receive credit for LWSO 2003.

LWSO4003   **Seminar in Law and Society**   **3 ch**

This seminar engages in an advanced in-depth analysis of contemporary topics in the field of socio-legal studies. The focus of the course will vary from year to year. *Prerequisite:* LWSO 2003.

LWSO5000   **Honours Thesis in Law and Society**   **6 ch [W]**

Directed reading and research leading to an Honours thesis on a topic in Law and Society. Students will consult with the Coordinator in finding a suitable topic and thesis supervisor. *Prerequisite:* LWSO 2003; *Pre/Co-requisite:* LWSO 4003. Limited to students admitted to the LWSO Joint Honours program.

LINGUISTICS

See beginning of Section H for abbreviations, course numbers and coding.

LING2401   **Introduction to Language**   **3 ch (3C) [W]**

Basic concepts, language structure and change.

LING3006   **Linguistic Introduction to Canadian English (A)**   **3 ch (3C) [W]**

Introduces various ways of describing the structure, especially syntactic, of language. English, specifically Canadian English, is used as a model. Assumes some acquaintance with linguistic analysis; students will normally have taken either LING 2401 (Introduction to Language) and 3411 (Phonetics and Phonemics) or ENGL 3010 (History of the English Language).

LING3010   **History of the English Language (O)**   **6 ch (3C) [W]**
(Cross-Listed: ENGL 3010)

After a brief consideration of the nature of human language, introduces students to phonetics and the International Phonetic Alphabet. Then traces the history of the English language from its Indo-European origins to its present state. Focuses on the various kinds of linguistic change: those affecting sounds, forms, and vocabulary.

LING3411   **Phonetics and Phonemics**   **3 ch (3C) [W]**

Articulatory phonetics and phonology. *Prerequisites:* Previous experience in linguistics. May be taken concurrently with LING 2401.

LING3422   **Morphology and Syntax**   **3 ch (3C) [W]**

Structure of meaningful elements; syntax. *Prerequisites:* LING 3411.

LING3903   **Independent Studies in Linguistics I**   **3 ch**

Studies in linguistics. The topic and the content are to be chosen jointly by the student and the instructor. The course must be approved by the Director of Linguistics.

LING3904   **Independent Studies in Linguistics II**   **3 ch**

Studies in linguistics. The topic and the content are to be chosen jointly by the student and the instructor. The course must be approved by the Director of Linguistics.

FR/LING3404   **Introduction à la linguistique**   **3 cr (3C)**

Étude d'aspects phonologiques, morphologiques et syntaxiques, à partir d'exemples tirés du français.

FR/LING3404   **Introduction to Linguistics**   **3 ch (3C)**

Introduction to various sub-disciplines of linguistics (phonology, morphology, and syntax) exemplified through French.

FR/LING3414   **Sociolinguistique**   **3 cr (3C)**

Initiation à l'étude empirique des interactions entre la langue française et son contexte social. Thèmes: variation sociale et stylistique, dialectes et norme, attitudes linguistiques, féminisation du discours, bilinguisme. *Prérequis:* FR/LING 3404 ou l'équivalent; FR/LING 3414 et FR/LING 3404 peuvent être suivis simultanément.

FR/LING3414   **Sociolinguistics of French**   **3 ch (3C)**

An introduction to the empirical study of language as it is used in its social context. Topics include: social and stylistic variation, dialects and the "standard," linguistic attitudes, language and gender, bilingualism. *Prerequisite:* FR/LING 3404 or equivalent; FR/LING 3414 may be taken concurrently with FR/LING 3404.

FR/LING3424   **Phonétique et phonologie**   **3 cr (3C)**

Étude des concepts fondamentaux de la phonétique et de la phonologie. Description des propriétés phonologiques du français contemporain et de leurs diverses réalisations phonétiques. Étude des variantes régionales et sociales. *Prérequis:* FR 3404.

LING3424   **Phonetics and Phonology of French**   **3 ch (3C)**

The concepts and methods of phonetics and phonology. The basic French sound system and its various phonetic realizations depending on dialects and sociolects. *Prerequisite:* FR 3404.

FR/LING3444   **La créativité lexicale**   **3 cr (3C)**

Le vocabulaire est un système dynamique, capable de se modifier pour répondre aux besoins de la société. Ce cours consiste en l'étude et l'analyse de la structure du lexique, des mécanismes créateurs de la langue et des divers moyens de formation des mots, y compris la dérivation, la néologie, l'emprunt et la métaphore. *Prérequis:* FR/LING 3404.

FR/LING3444   **Lexical Creativity**   **3 ch (3C)**

The vocabulary of a language is a dynamic system constantly evolving to meet the changing needs of society. This course consists of the study and analysis of the structure of the lexicon, the creative mechanisms of language, and the various types of word formations, including derivation, neology, loanwords and metaphors. *Prerequisite:* FR/LING 3404.

FR/LING3454   Histoire de la langue française   3 cr (3C)

Étude de l'évolution du français depuis ses origines latines jusqu'à nos jours. Esquisse diachronique: phonologie, morphologie, syntaxe et vocabulaire de l'ancien français, du français classique et du français moderne. *Prérequis*: FR 3404.

FR/LING3454   History of French   3 ch (3C)

A study of the evolution of French from its roots in Latin to the present. Old, Middle and Modern French will be sketched: the phonology, morphology, syntax and vocabulary of each period will be studied. *Prerequisites:* FR 3404.

FR/LING3464   Syntaxe   3 cr (3C)

Étude de la structure phrastique dans le cadre de la grammaire générative. Présentation de phénomènes typiques du français, illustrant quelques règles syntagmatiques et transformationnelles. *Prérequis*: FR 3404.

FR/LING3464   Syntax   3 ch (3C)

A study of sentence structure in the framework of generative grammar. Phrase structure and transformational rules will be studied and some classical problems of French syntax will be presented. *Prerequisites:* FR 3404.

FR/LING3484   Questions de psycholinguistique   3 cr (3C)

Approche pluridisciplinaire du comportement verbal. Étude de l'acquisition et de la pathologie du langage par rapport aux théories linguistiques et neurolinguistiques.

FR/LING3484   Issues and Trends in Psycholinguistics   3 ch (3C)

Pluridisciplinary approach to language as behaviour. Developmental and pathological issues are discussed in relation to linguistic and neurolinguistic theories.

FR/LING3494   Mythes et réalités sur le langage   3 cr (3C)

Discussion de mythes répandus sur le langage visant l'étude de questions d'intérêt général. Thèmes abordés: acquisition du langage et apprentissage de langues, langage et pensée, origines des langues, enfants sauvages, communication animale, dégradation qualitative des langues, réformes orthographiques, codes signés, langues primitives, complexité grammaticale, sabirs et créoles, argots et jargons, langage artificielles. Les étudiant(e)s inscrit(e)s au programme de linguistique anglaise pourront rédiger leurs travaux en anglais. *Prérequis*: LING/FR 3404 ou l'équivalent; LING/FR 3494 et LING/FR 3404 peuvent être suivis simultanément.

FR/LING3494   Myths and Realities about Language   3 ch (3C)

Discussion of widespread myths about language, aiming to shed light on questions of general interest. Topics include: language acquisition and language learning, language and thought, origin of languages, feral children, communication among animals, deterioration of language quality, orthographic reforms, sign languages, primitive languages, grammatical complexity pidgins and creoles, slang and jargons, artificial language. Students enrolled in the Linguistics Program may write their papers in English. *Prerequisite* or *Co-requisite*: LING/FR 3404 or equivalent.

FR/LING4414   Français canadien   3 cr (3C)

Examen de traits caractéristiques du français parlé au Canada, notamment du franco-acadien et du franco-québécois. *Prérequis*: deux cours FR/LING.

FR/LING4414   Canadian French   3 ch (3C)

Examines the major linguistic features of French spoken in Canada, in particular Acadian and Québécois French. *Prerequisite:* Two courses in FR/LING.

FR/LING4444   Sémantique   3 cr (3C)

Initiation à l'étude de la signification et de la référence. Survol historique du domaine, sa place au sein de la linguistique générale et parmi d'autres sciences humaines; notions essentielles à l'examen des relations de sens; analyse componentielle. *Prérequis*: FR/LING 3404.

FR/LING4444   Semantics   3 ch (3C)

An introduction to the study of meaning and reference. Historical survey of the field, and its place within general linguistics and amongst other fields of human sciences; fundamental notions for the examination of meaning relations; componential analysis. *Prerequisite:* FR/LING 3404.

FR/LING4464   Théorie linguistique   3 cr (3C)

Mise en place de concepts fondamentaux en linguistique moderne. Étude de la relation entre forme et sens, de la nature des représentations grammaticales et de leur pertinence. *Prérequis*: FR 3404.

FR/LING4464   Linguistic Theory   3 ch (3C)

Presents fundamental concepts in modern linguistics. Examines the relation between form and meaning, the nature of grammatical representations, and their relevance. *Prerequisites:* FR 3404.

FR/LING4465   Morphologie generative   3 cr (3C)

Initiation aux principes et aux règles de base régissant la formation des mots. Présentation et étude de tendances récentes en théorie morphologique. *Prérequis*: FR 3404.

FR/LING4465   Generative Morphology   3 ch (3C)

Introduction to basic principles and rules governing word formation. Presents and examines recent trends in contemporary morphological theory. *Prerequisites:* FR 3404.

MATHEMATICS

See also "Statistics".
Credit for MATH 1003
Calculus Challenge Exam
This examination, which is held in early June, is open to students registered in a calculus course at a high school that has made arrangements with the Department of Mathematics & Statistics. A fee will be charged.
Students who qualify for credit will receive a certificate entitling them to credit for and therefore exemption from MATH 1003 when they register at UNB. Upon the student's acceptance of the credit (3ch), the letter grade of the exam will be recorded on their transcript. **NOTE**: Part-time students will be charged a course fee for the MATH 1003 credit.
More information can be obtained from
https://www.unb.ca/fredericton/science/depts/math-stats/index.html or
from the Department.
Advanced Placement Test
The Science Faculty offers Advanced Placement Tests for some first year science courses, including MATH 1003, during registration week (early September) each year.
More information can be obtained by consulting the Science section of the calendar or by contacting the Science Faculty or the Department of Mathematics & Statistics.
Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a D grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.
NOTE: See beginning of Section H for abbreviations, course numbers and coding.

MATH0863   Precalculus Mathematics   0 ch (3C 1T)

A review of high school mathematics topics, including basic properties of number systems, manipulation of algebraic expressions, equations and inequalities, analytic geometry, linear and quadratic functions, polynomial and rational functions, exponential and logarithm functions, trigonometric functions. **NOTE**: This course is designed to serve as preparation for calculus courses at the university level, such as MATH 1003, MATH 1823 and MATH 1843. It carries no credit for degree programs at UNB Fredericton.

MATH1003   Introduction to Calculus I   3 ch (4C)

Functions and graphs, limits, derivatives of polynomial, log, exponential and trigonometric functions. Curve sketching and extrema of functions. **NOTE**: Credit may be obtained for only one of MATH 1003, MATH 1053, MATH 1823 and MATH 1843. **NOTE**: Part-time students will be charged a course fee for the MATH 1003 credit. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-Calculus A 120 and Pre-Calculus B 120, or equivalent courses.

MATH1013   Introduction to Calculus II   3 ch (4C)

Definition of the integral, fundamental theorem of Calculus, Techniques of integration, improper integrals. Ordinary differential equations. Taylor polynomials and series. **NOTE**: Credit may be obtained for only one of MATH 1013 or MATH 1063. *Prerequisites:* MATH 1003 or MATH 1053. **NOTE** that neither MATH 1823 nor MATH 1843 fully prepare students for MATH 1013; consult the Department of Mathematics and Statistics for advice.

MATH1053   Enriched Introduction to Calculus   3 ch (4C)

The syllabus is similar to that for MATH 1003, with more emphasis placed both on the theory of calculus and interesting applications. The course will be of special interest to students with strong mathematical backgrounds. Any interested student (with or without high school calculus) is encouraged to consult with the Mathematics Department. **NOTE**: Credit may be obtained for only one of MATH 1003, MATH 1053, MATH 1823 or

MATH 1843. *Prerequisites:* Superior grades (at least 95% recommended) in each of Pre-Calculus A 120 and Pre-Calculus B 120; or a grade of 85% or higher in a Grade 12 Math course that contains some Calculus; or consent of the Department of Mathematics and Statistics.

MATH1063   Enriched Introduction to Calculus II   4 ch (4C)

The syllabus for this course is similar to that of MATH 1013. As with MATH 1053, more emphasis is placed on theory, mathematical rigor and interesting applications. **NOTE**: Credit may not be for only one of MATH 1013 or MATH 1063. *Prerequisite:* A grade of B or higher in MATH 1053, or MATH 1003 with consent of the Department of Mathematics and Statistics.

MATH1503   Introduction to Linear Algebra   3 ch (3C)

Lines and planes, the geometry and algebra of vectors, systems of linear equations, matrix algebra, linear independence, linear transformations, determinants, complex numbers, eigenvectors, diagonalization, rotation matrices, quadratic forms, least squares. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-Calculus A 120 and Pre-Calculus B 120, or equivalent courses. **NOTE**: Credit will not be given for both MATH 1503 and MATH 2213.

MATH1823   Calculus for Management Science   3 ch (3C 1T)

Polynomial, logarithmic and exponential functions. Limits and derivatives. Extreme values and related rates. Basic linear programming. Simple integration and differential equations, with stress on applications to business and economics. **NOTE**: Credit may be obtained for only one of MATH 1003, MATH 1053, MATH 1823 or MATH 1843. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-Calculus A 120 and Pre-Calculus B 120, or equivalent courses.

MATH1833   Finite Mathematics for Management Science   3 ch (3C)

Matrices and systems of linear equations. Linear programming concepts; graphical solution of two variable problems. Permutations and combinations. Elementary probability. Mathematics of finance. **NOTE**: Credit for MATH 1833 will not be given if the student has previously taken either MATH 1503 or MATH 2213. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses: Pre-Calculus 110 or Foundations of Mathematics 120, or an equivalent course.

MATH1843   Mathematics for Management   3 ch (3C 1T)

Polynomial, logarithmic and exponential functions. Matrices and systems of linear equations. Limits and continuity. Differentiation of elementary functions. Curve sketching and opitmization. Integration of polynomial and exponential functions. **NOTE:** Credit may be obtained for only one of MATH 1003, MATH 1053, MATH 1823, or MATH 1843. *Prerequisites:* A minimum grade of 60% in New Brunswick high school courses. Pre-Calculus A 120 and Pre-Calculus B 120, or equivalent courses.

MATH 2003   Intermediate Mathematics I   3 ch (3C 1T)

Analytic geometry and vectors. Parametric curves. Polar, cylindrical and spherical coordinates. Functions of several variables, partial derivatives, applications to max-min. Double and triple integrals. *Prerequisites:* MATH 1013 or MATH 1063. **NOTE**: Credit may not be obtained for both MATH 2003 and MATH 2513.

MATH2013   Intermediate Mathematics II   3 ch (3C 1T)

Review of first order differential equations. Second order linear O.D.E.'s. Infinite series, including power series solutions to O.D.E.'s. Line and surface integrals. Theorems of Green and Stokes. Divergence Theorem. *Prerequisite:* MATH 2003.

MATH2203   Discrete Mathematics   3 ch (3C)

Logic, methods of proof, mathematical induction, elementary set theory, functions and relations. **NOTE**: This course is designed for students desiring a good grounding in the foundations of mathematics. Theorems and proofs are an important part of the course. Credit will not be given for both MATH 2203 and CS 1303. Students majoring in Mathematics must take MATH 2203. **NOTE**: It is strongly recommended that students should have at least a grade of B in first year MATH courses (or their equivalents) or strong high school math grades, to take this course.

MATH2213   Linear Algebra I   3 ch (3C)

This course introduces the basic concepts of linear algebra, mainly in finite dimensional real vector spaces. Systems of linear equations, vector and matrix algebra, bases and dimension of subspaces, row and column spaces, linear transformations and matrix representations, inner products, determinants, eigenvectors and diagonalization. Applications as time permits. *Prerequisites:* MATH 1013, or MATH 1063, or both MATH 1823 and 1833. This course may also be taken with the consent of the instructor. Interested first year students are encouraged to enquire. **NOTE**: Credit will not be given for both MATH 1503 and MATH 2213.

MATH2513   Multivariable Calculus for Engineers   4 ch (4C)

Functions of several variables, partial derivatives, multiple integrals, vector functions, Green's and Stokes' Theorems. *Prerequisites:* MATH 1013 and MATH 1503. **NOTE**: Credit may not be obtained for both MATH 2003 and MATH 2513.

MATH2623   Introduction to Mathematical Thinking   3 ch (3C)

An introduction to mathematical thinking. Content varies, and is focused on presenting mathematics as a living, creative discipline. A sample of topics: patterns and symmetry, tiling, non-Euclidean geometry, chaos and fractals, planetary motion, binary numerals, prime numbers, Fibonacci numbers, voting systems, the calendar. Not available for credit to students with a Major in Mathematics/Statistics. *Prerequisite:* Successful completion of at least one year of a university program.

MATH2633   Fundamental Principles of   3 ch (3C 1L)
Elementary School Mathematics

This course is intended for students who anticipate a career as an elementary or middle school teacher. The course focuses on topics taken from the K-8 curriculum with extensions beyond classroom topics to show the 'how' and 'why' behind school mathematics. The major topics are problem solving, number concepts, number and relationship operations, patterns and relations, shape and space, as well as data management and probability. Intended for students registered in arts programs. Not available for credit to students who would have 6 ch of Level 1000 mathematics in their degree programs. *Antirequisite*: MATH 3633. *Prerequisite:* Successful completion of at least one year of a university program.

MATH3003   Applied Analysis   3 ch (3C)

Vector spaces of functions, convergence in normed linear spaces, orthogonal polynomials, Fourier series, Fourier transform, Fast Fourier transform, introduction to wavelets, and selected applications. *Prerequisites:* MATH 2013 or MATH 3503, and MATH 2213 or MATH 1503 (MATH 3213 recommended). **NOTE**: Credit will not be given for both MATH 3003 and MATH 3113.

MATH3033   Group Theory   3 ch (3C)

Groups are the mathematical objects used to describe symmetries. This course covers the fundamentals of group theory, together with applications selected from geometry, advanced algebra and physical sciences. *Prerequisites:* MATH 2203 or CS 1303, and MATH 2213 or MATH 1503 (MATH 3213 recommended). Other interested students are encouraged to seek consent of the instructor.

MATH3043   Ordinary Differential Equations   3 ch (3C)

First order equations, linear systems, variation of parameters, method of undetermined coefficients, Laplace transforms, power series solutions, fundamental matrix solution. Existence and uniqueness of solutions, properties of linear systems, eigenvalue problems, vector fields, phase-plane analysis. Liapunov method. *Prerequisites:* MATH 2013 or MATH 2513. **NOTE**: Credit cannot be obtained for both MATH 3043 and MATH 3503.

MATH3063   Geometry   3 ch (3C)

Axiomatic systems, non-Euclidean geometry, transformations in geometries, topological properties of figures. As well as serving mathematics majors, this course will be of particular benefit to prospective mathematics teachers. *Prerequisites:* MATH 1503 or MATH 2213, and MATH 2203 or CS 1303 or permission of the instructor. Other interested students are encouraged to enquire.

MATH3073   Partial Differential Equations   3 ch (3C)

Methods of solution for first order equations. Classification of second order equations. Characteristics. Analytic and numerical methods of solution for hyperbolic, elliptic and parabolic equations. *Prerequisites:* MATH 2013 or both MATH 2513 and MATH 3503.

MATH3093   Elementary Number Theory   3 ch (3C)

Primes, unique factorization, congruences, Diophantine equations, basic number theoretic functions. As well as serving mathematics majors, this course will be of particular benefit to prospective mathematics teachers.

MATH3103   Analysis I   3 ch (3C)

The real number system, metric spaces, sequences and series, continuity. *Prerequisites:* MATH 2013, MATH 2203, and MATH 2213 or MATH 1503.

MATH3113   Analysis II   3 ch (3C)

Differential calculus, integration, sequences and series of functions, completeness of basis, convergence of Fourier Series, Fourier Transforms. Additional topics may include differential forms or wavelets

and wavelet transforms. *Prerequisite:* MATH 3103. **NOTE**: Credit will not be given for both MATH 3003 and MATH 3113.

MATH3213   **Linear Algebra II**   3 ch (3C)

Finite and infinite dimensional vector spaces over general fields. Subspaces, independent and spanning sets, dimension, linear operators, determinants, inner product spaces. As time permits, applications selected from least squares approximation, Markov chains, data compression, traffic flow, robotics, genetics, graph theory, cryptography. *Prerequisite:* MATH 2213 or MATH 1503 or consent of the instructor.

MATH3243   **Complex Analysis**   3 ch (3C)

Complex analytic functions, contour integrals and Cauchy's theorems; Taylor's, Laurent's and Liouville's theorems; residue calculus. *Prerequisites:* MATH 2003, MATH 2013 or equivalent.

MATH3333   **Combinatorial Theory**   3 ch (3C)

Topics selected from: Principle of inclusion and exclusion, Mobius inversion, generating functions, systems of distinct representatives, Ramsey's Theorem, duality in external problems, duality in programming, dynamic programming, block designs, introduction to matroid theory, signal-flow graphs. (The course is also of interest to students in Computer Science and Engineering.) *Prerequisites:* MATH 1003, MATH 1823 or MATH 1833.

MATH3343   **Networks and Graphs**   3 ch (3C)

Graphs, Euler paths, tournaments, factors, spanning trees, applications; graph colourings, planar graphs, Menger's theorem, flows in networks, flow algorithms. *Prerequisites:* MATH 2203 or CS 1303 and an additional 3 ch in Math and/or Statistics.

MATH3353   **Computational Algebra**   3 ch (3C)

Topics in abstract algebra are approached from the perspective of what can be computed using such software packages as Maple, Macaulay and GAP. The topics covered will be selected from: Grobner bases, resultants, solving polynomial equations, invariant theory of finite groups, and the exact solution of differential equations. The course work will include a mixture of problem sets emphasizing theory and practical lab assignments. *Prerequisites:* One of MATH 1013 or MATH 1063, and one of MATH 1503 or MATH 2213.

MATH3363   **Finite Mathematics (A)**   3 ch (3C)

Applications of algebraic and combinatorial methods to a selection of problems from coding theory, computability, information theory, formal languages, cybernetics and the social and physical sciences. *Prerequisite:* 12 ch in Math and/or Stat.

MATH3373   **Introduction to Game Theory**   3 ch (3C)
                          (Cross-Listed: ECON 4673)

Strategic games, n-person games in normal form, dominated strategies, Nash equilibrium, mixed strategies and mixed strategy equilibrium, games with perfect information, games with imperfect information, Bayesian games, extensive games. The course introduces basic non-cooperative game theory and analytical tools for decision makers (consumers, firms, politicians, governments). It is suitable for Mathematics, Economics, Computer Science, Management Science, Political Science, Social Science and Science students or any student with a minor in such disciplines, in particular those in the Mathematics/Statistics-Economics option. **NOTE**: this course is cross-listed as ECON 4673. Students cannot obtain credit for both MATH 3373 and ECON 4673 (or 5673). *Prerequisites:* MATH 1823 and MATH 1833; or MATH 1003 and MATH 1013; or MATH 1053 and MATH 1063; or ECON 3013; or permission of the instructor.

MATH3383   **Introduction to Mathematical Logic**   3 ch (3C)

The course introduces the basic concepts of mathematical logic, including the Axiom of Choice and its equivalents; propositional logic; languages and structures, axioms and theories, models; elements of model theory (Completeness, Compactness, Löwenheim-Skolem theorems, nonstandard models); theory of computability (ChurchTuring Thesis, recursive functions and sets, recursively enumerable sets, decision problems, the Halting Problem); Gödel's Incompleteness Theorems. *Prerequisites:* MATH 1013; and either MATH 1503 or MATH 2213; and either MATH 2203 or CS 1303.

MATH3413   **Introduction to Numerical Methods**   3 ch (3C)

Intended for Mathematics, Science or Engineering students. Error analysis, convergence and stability. Approximation of functions by polynomials. Numerical quadrature and differentiation. The solution of linear and nonlinear equations and the solution of ordinary differential equations. This course will emphasize the understanding of numerical algorithms and stress applications in the applied sciences, as well as the influence of finite precision and arithmetic on computational results. Credit will not be given for both MATH 3413 and CS 3113. *Prerequisites:* CS

1003 or CS 1073; and MATH 1003 or MATH 1053; and MATH 2213 or MATH 1503.

MATH3463   **Special Relativity (A)**   3 ch (3C)

The course provides an introduction to the physical principles (Lorentz invariance, constancy of the speed of light, equivalence of mass and energy) and the mathematical underpinnings (Minkowski spacetime, tensors) of the theory of special relativity. This course is cross listed PHYS 3912. Credit cannot be obtained for both MATH 3463 and PHYS 3912. *Prerequisites:* MATH 2003, PHYS 1062 or equivalent, or permission of the instructor. *Co-requisites:* MATH 2013, PHYS 2311.

MATH3473   **Mathematical Modelling (A)**   3 ch (3C)

This course is intended to develop skills in translating a problem in the real world to a well formulated mathematical problem. The basic techniques and tools for model formulation, model analysis, numerical simulation and model interpretation will be offered. Project topics will be chosen from Biology, Physics, Chemistry, Mechanics, Engineering, Economics and elsewhere. *Prerequisites:* MATH 1013 and permission of the instructor.

MATH3503   **Differential Equations for Engineers**   3 ch (3C 1T)

Nonhomogeneous differential equations, undetermined coefficients, variation of parameters, systems of 1st and 2nd order ordinary differential equations, Laplace transforms, Fourier series. *Prerequisite:* MATH 1503 or 2213. *Co-requisite:* MATH 2513 or MATH 2003. **NOTE**: Credit cannot be obtained for both MATH 3503 and MATH 3043.

MATH3543   **Differential Geometry for Geomatics Engineers**   3 ch (3L 1T)

Basic analytic geometry, spherical trigonometry, geometry of curves in space, measurements on surfaces, Gaussian surface geometry. *Prerequisite:* MATH 2513.

MATH3623   **History of Mathematics (A)**   3 ch (3C) [W]

A non-technical survey of the development of mathematics from prehistory through Babylonian, Egyptian, Greek, Indian and Islamic cultures. More especially on recent (post-1940) history. An attempt is made to discuss each new mathematical contribution in light of both past mathematics and social scientific forces of the day. Some background in Mathematics necessary. *Prerequisite:* 12 ch in Math and/or Statistics.

MATH3633   **Fundamental Principles of School Mathematics I**   3 ch (3C)

A course for undergraduate students who anticipate a career as teachers. Topics build around the K-12 syllabus, with extensions beyond the classroom, to show the 'how' and 'why' behind school mathematics. Mathematical language; real numbers and other mathematical structures; Euclidean geometry; functions; mathematical connections; problem solving. *Prerequisite:* 6 ch of university mathematics.

MATH3803   **Introduction to Mathematics of Finance**   3 ch (3C)

Measurement of interest, compound interest, annuities, amortization schedules and sinking funds, bonds. *Prerequisite:* MATH 1013 or a grade of B or better in MATH 1823.

MATH3813   **Mathematics of Finance II (O)**   3 ch (3C)

A more advanced study of the topics in MATH 3803 including varying and continuous annuities and yield rates. *Prerequisite:* MATH 3803 with a grade of B or better.

MATH3843   **Introduction to Life Contingencies**   3 ch (3C)

Survival distributions, general life insurances and life annuities, reserves. Joint annuities and last survivor annuities. *Prerequisite:* One term of statistics and MATH 3803.

MATH4023   **Functional Analysis**   3 ch (3C)

Normed spaces, the Hahn-Banach theorem, uniform boundedness theorem. The contraction mapping theorem. Existence and uniqueness for nonlinear differential equations. Further topics may include Wavelets or Banach spaces. *Prerequisites:* Any two of MATH 3003, MATH 3103, MATH 3113, or permission of the instructor.

MATH4043   **Advanced Algebra (A)**   3 ch (3C)

Prime fields and characteristic, extension fields, algebraic extensions, theory of finite fields, Galois theory, and topics which may include some of: rings, topological algebra, multilinear and exterior algebra, quadratic forms. *Prerequisite:* MATH 3033.

MATH4063   **Advanced Geometry (O)**   3 ch (3C)

A deeper investigation of Euclidean and Non-Euclidean spaces of any dimension. Topics selected from: axiom systems, linear and affine transformations, conformal and linear models for Euclidean and hyperbolic spaces and their isometry groups, basic theory of convexity,

combinatorial properties of polytopes. *Prerequisite:* One of MATH 2213, MATH 2003, MATH 2513 or MATH 3063.

MATH4100   Honours Project   6 ch [W]

Mathematics Honours students must complete a project under the supervision of a faculty member. The project is to include a written report and an oral presentation. Prior to being admitted into MATH 4100, the student must have been admitted to the Honours Program and have submitted an acceptable project proposal to the department. Normally students would begin preparation and research for the project during their third year of study, submit the proposal by October of their fourth (final) year of study, and complete the written and oral presentation by the end of the winter term, to graduate in May of that year. Honours students in an interdepartmental program with mathematics may choose to complete their honours project in mathematics.

MATH4103   Measure Theory and Wavelets (O)   3 ch (3C)

Brief review of Riemann integration. Algebras of sets, outer measure, measure, measurable sets, measurable functions, the Lebesgue integral, properties of the Lebesgue integral, abstract measure spaces, integrals and derivatives, sequences of integrals, Fubini's theorem. Properties of Fourier transforms, multiresolution analysis, Daubechies wavelets. *Prerequisite:* One of MATH 3003, MATH 3103, or permission of the instructor.

MATH4123   Advanced Linear Algebra (O)   3 ch (3C)

The theory of vector spaces and linear transformations, dual spaces, multilinear maps (including tensors and determinants); further topics chosen from canonical forms, metric vector spaces, algebras, etc. *Prerequisite:* MATH 3213.

MATH4142   Introduction to Dynamical Systems (O)   3 ch (3C)

Many of the processes studied in science, engineering and economics are described by nonlinear differential equations. This course introduces qualitative methods to find essential information about the solutions of nonlinear equations without necessarily attempting to find the solution completely. Topics include flows, stability, phase plane analysis, limit cycles, bifurcations, chaos, attractors, maps, fractals. Applications throughout. *Prerequisite:* MATH 3043, or both MATH 2513 and MATH 3503, or permission of the instructor.

MATH4153   Topology (O)   3 ch (3C)

A continuation of the topological concepts introduced in MATH 3103. Basic results in point-set topology. *Prerequisite:* MATH 3103.

MATH4413   Fluid Mechanics (O)   3 ch (3C)

Derivation of the Equations of Motion: Euler's equations, rotation and vorticity, Navier-Stokes equations. Potential Flow: complex potentials, harmonic functions, conformal mapping, potential flow in three dimensions. Slightly Viscous Flow: boundary layers and Prandtl boundary layer equations. Gas Flow in one dimension: characteristics and shocks. *Prerequisite:* MATH 2003 or MATH 2013 or equivalent.

MATH4433   Calculus of Variations (O)   3 ch (3C)

Introduction to functionals and function spaces. Variation of a functional. Euler's equations, necessary condition for an extremum, case of several variables, invariance of Euler's equation, fixed end point problem for unknown functions, variational problems in parametric form, functionals depending on high order derivatives. *Prerequisite:* MATH 2013 or equivalent.

MATH4443   Introduction to Quantum Field Theory (O)   3 ch (3C)
(Cross-Listed: PHYS 4953)

Relativistic quantum mechanics. The negative energy problem. Classical field theory, symmetries and Noether's theorem. Free field theory and Fock space quantization. The interacting *Field:* LSZ reduction formula, Wick's theorem, Green's functions, and Feynman diagrams. Introduction to Quantum electrodynamics and renormalization. Credit cannot be obtained for both MATH 4443 and PHYS 4953. *Prerequisites:* MATH 3003, PHYS 3351, MATH 3463/PHYS 3912 and one of MATH 3043, MATH 3503, PHYS 2312, PHYS 3331, or permission of instructor.

MATH4473   Introduction to Differential Geometry (A)   3 ch (3C)

Geometry of embedded curves and surfaces, n-dimensional manifolds, tensors, Riemannian geometry. *Prerequisite:* MATH 2013 or equivalent and MATH 2213.

MATH4483   Introduction to General Relativity (A)   3 ch (3C)
(Cross-Listed: PHYS 4983)

Along with quantum theory, general relativity is one of the central pillars of modern theoretical physics with wide-ranging implications for astrophysics and high energy physics. The essential idea is that gravitation is a manifestation of the curvature of spacetime rather than a force in the Newtonian sense. This course will provide students with a basic working understanding of general relativity and an introduction to important applications such as black holes and cosmology. Contents: review and geometric interpretation of special relativity, foundations of general relativity, linearized gravity and classical tests, black holes, cosmology. **NOTE:** Credit cannot be obtained for both MATH 4483 and PHYS 4983. *Prerequisites:* MATH 3463/PHYS 3912 and MATH 4473 or permission of instructor.

MATH4503   Numerical Methods for Differential Equations   3 ch (3C)

The numerical solution of ordinary differential equations, and partial differential equations of elliptic, hyperbolic and parabolic type. The course is a basic introduction to finite difference methods, including the associated theory of stability, accuracy and convergence. Students will gain practical experience using state-of-the-art numerical solvers and visualization tools, while solving practical problems from the physical and biological sciences. *Prerequisite:* One of: MATH 3043, MATH 3073, MATH 3413, MATH 3503, CS 3113, CHE 3418, or ME 3522.

MATH4563   Mathematical Biology (A)   3 ch (3C)
(Cross-Listed: BIOL 4563)

Overview of the field of Mathematical Biology. Development, simulation and analysis of mathematical models describing biological systems. Equal emphasis is placed on developing simple models and case studies of successful models. The principal mathematical tools are differential and difference equations, finite mathematics, probability and statistics. This course is intended for students in their third or fourth year having an interest in biological research. *Prerequisite:* A course in statistics, MATH 2003 or MATH 2013 or equivalent, or permission of the instructor. Credit may not be obtained for both MATH 4563 and BIOL 4563.

MATH4633   Calculus Revisited (O)   3 ch (3C)

A course for high school mathematics teachers. The course is built around a set of optimization problems, whose solution requires review of topics in first and second year calculus and linear algebra. Connections are made with topics in the Common Atlantic High School Mathematics Curriculum. *Prerequisite:* Permission of Instructor.

MATH4853   Mathematics for Financial Derivatives (A)   3 ch (3C)

Basics of options, futures, and other derivative securities. Introduction to Arbitrage. Brief introduction to partial differential equations. Stochastic calculus and Ito's Lemma. Option pricing using the Black-Scholes model. Put-call parity and Hedging. Pricing of European and American call and put options. Numerical methods for the Black-Scholes model: binary trees, moving boundary problems, and linear complementarity. The barrier, and other exotic options. *Prerequisites:* CS 1073 or experience with a computer programming language, and either MATH 3503 and STAT 2593, or MATH 2013, MATH 2213, and STAT 3083.

MATH4903   Independent Study in Mathematics   3 ch

Topics to be chosen jointly by student, advisor, and Department Chair. May be taken for credit more than once. Title of topic chosen will appear on transcript. *Prerequisite:* Permission of Department.

MECHANICAL ENGINEERING

NOTE: See beginning of Section H for abbreviations, course numbers and coding.
All courses must be passed with a grade of C or better. All pre- and *Co-requisitess* are strictly enforced.
L* = Laboratory periods on alternate weeks.
T*= Tutorial periods on alternate weeks.
* = Engineering electives. Not all offered every year. Consult Department as to availability of courses from year to year at web site:
https://www.unb.ca/fredericton/engineering/depts/mechanical/

ME1312   Computer Aided Design   4 ch (3C 3L)

Introduces the technology of 3D parametric geometric modeling to design and model mechanical engineering parts, assemblies and devices. Geometric variables and their interrelationships will be covered by projects involving the design of mechanical components, assemblies and machines to meet functional requirements. Manufacturing requirements including Geometric Dimensioning and Tolerancing. The use of the model for analysis, optimization and simulation will be stressed. Presentation of the model through engineering drawings and pictorial renderings. Animation of mechanisms. A comprehensive commercial CAD program will be utilized. *Prerequisite:* ENGG 1003.

ME2003   Dynamics for Engineers   4 ch (3C 2L 1T)

The dynamic analysis of linear particle systems based on momentum. The analysis of centroids and moments of inertia for rigid bodies. Introduction to the rotation of a rigid body about a fixed axis, motion of a rigid body in a plane. The dynamic analysis of a rigid body with general planar motion using Newton's second law, work and energy, momentum and angular momentum. *Prerequisites:* ENGG 1082, MATH 1013. *Co-requisite:* MATH 1503, or MATH 2213, or equivalent.

535

ME2111 **Mechanics of Materials I** **3 ch (3C 1T)**

Basic concepts, uniaxial stress and strain, Hooke's law, torsion, pure bending, bending design, shear flow, transverse loads, stress and strain transformation, Mohr's circle, strain measurement, yield criteria. *Co-requisite*: ME 2003 or APSC 1023.

ME2122 **Mechanics of Materials II** **3 ch (3C 2T*)**

Fatigue, thin-wall pressure vessels, strength and deflection of beams, buckling of columns, instability, indeterminate beams, energy methods, Castigliano's theorem. *Prerequisite:* ME 2111 or ME 2121 or CE 2023.

ME2125 **Mechanics of Materials Design Project** **1 ch (2L*) [W]**

Analysis of the strength of a mechanical device. Shapes and materials will be modified to meet deflection and stress limits. Written reports will document choices made and assessment of design. Group oral reports. *Prerequisite:* ME 2111 or ME 2121 or CE 2023. *Co-requisite*: ME 2122.

ME2143 **Kinematics and Dynamics of Machines** **3 ch (3C 2T*)**

Fundamental concepts of linkages; displacement, velocity and acceleration analysis using graphical and analytical methods. Static and dynamic force analysis of linkages. Design of cams, gears and gear trains; including ordinary and planetary gear trains. Balancing rotating masses. Simple gyroscopic effects. *Prerequisite:* APSC 1023 or ME 2003. *Recommended*: CS 1003 or other introductory programming course.

ME2145 **Kinematics and Dynamics Design Project** **1 ch (2L*) [W]**

Student groups to design and build working model of planar linkage mechanism, based on a mechanical application. Cooperation and project management skills. Written reports to document choices made; evaluation of working model performance; and position, velocity, acceleration and force analyses. Group oral reports. *Prerequisites:* ME 2003, APSC 1023. *Co-requisites*: ME 2143. *Recommended Co-requisite*: ME 2352 or ME 3352.

ME2352 **Design Optimization** **4 ch (3C 2L)**

Optimization of any design is essential either to remain competitive or to improve product efficiency and quality. Several optimization methods are presented through a variety of mechanical design and industrial engineering problems. Topics include: single and multi-variable unconstrained optimization, linear programming, transportation, assignment and network problems. Other topics such as constrained and global optimization are introduced. *Prerequisites:* CS 1003 and MATH 2513. *Recommended Co-requisite*: ME 2143.

ME2413 **Thermodynamics** **3 ch (3C 1T)**

Properties of a pure substance -- work and heat. First law and applications in non-flow and flow processes. Second law and reversibility: entropy, applications of the second law to non-flow and flow processes. Analysis of thermodynamic cycles: Otto and Diesel cycles. Thermodynamic relationships. *Prerequisites:* CHEM 1982, MATH 1013. *Co-requisite*: MATH 2513.

ME2415 **Thermodynamics Laboratory** **1 ch (3L*) [W]**

Laboratory experiments and measurements related to Thermodynamics 1. Laboratory reports and readings are assigned. *Co-requisite*: ME 3413 or ME 2413.

ME3222 **Manufacturing Engineering I** **4 ch (3C 2L* 1T*)**

Introduction to manufacturing processes; design criteria for material and process selections. Fundamentals of mechanical behaviour of materials, particularly the yield behaviour under triaxial stresses. Crystal structures; failure modes and the effect of various factors; manufacturing properties of metals. Surface structures and properties; service texture and roughness; friction, wear, and basic lubrication surface treatment design. Metal casting processes and equipment; casting design; heat treatment design. The laboratory exercises are: heat treatment, precipitation strengthening, Jominy centrifugal testing casting and impact toughness test. *Prerequisites:* CHE 2501, CHE 2506, and ME 2111.

ME3232 **Engineering Economics** **3 ch (3C)**

Application of engineering economic analysis to mechanical and industrial engineering systems. Major emphasis will be given to decision-making based on the comparison of worth of alternative courses of action with respect to their costs. Topics include: discounted cash flow mechanics, economic analyses, management of money, economic decisions. Restricted to students with at least 60 ch.

ME3341 **Machine Design** **3 ch (3C 2T*)**

Review of design process. Safety, environmental and sustainability issues of machine design. Design of shafts, power screws, threaded fasteners. Tolerances and fits. Contact stresses. Lubrication, journal bearings and rolling element bearings. Gearing design: spur, helical, bevel and worm gearing. Critical speeds of rotating systems. Couplings, seals.

Prerequisites: ME 2143 and ME 2122. *Recommended:* (STAT 2593 or STAT 2264).

ME3345 **Machine Design Project** **2 ch (4L*) [W]**

Applies many topics of first 2 years in mechanical engineering. Practical aspects of detailed machine design project in team environment. Student groups to design, build and test a mechanical device for a client. Written reports will document choices made and assessment of design. Group oral reports. *Prerequisites:* ME 1312, ME 2122, ME 2145. *Co-requisite*: ME 3341.

ME3433 **Heat Transfer I** **3 ch (3C 1T)**

Conduction: One-dimensional steady conduction and applications. Thermal properties. The differential equations of conduction; analytic and numerical solutions to two-dimensional problems and applications. Unsteady conduction lumped and differential approaches with applications. Temperature measurement. Convection: Dynamic similarity and dimensional analysis; boundary layer theory and applications to flow over heated/cooled surfaces; laminar and turbulent flow-free convection. Heat transfer with change of phase. Radiation: the laws of black body radiation; Kirchhoff's law and gray body radiation. Combined modes of heat transfer: heat exchanger design; augmentation of heat transfer; fins and thermocouples. Environmental heat exchange. Equivalent to CHE 3304. *Prerequisites*: (ME 2413 or ME 3413), (ME 2415 or ME 3415), (ME 3511 or ME 3513).

ME3435 **Heat Transfer I Laboratory** **1 ch (3L*) [W]**

Laboratory experiments and measurements related to Heat Transfer I. Laboratory reports and readings are assigned. *Prerequisites:* (ME 2415 or ME 3415) and ME 3515) or CHE 2412. *Co-requisite*: ME 3433 or CHE 3304.

ME3511 **Fluid Mechanics** **3 ch (3C)**

The principles of fluid mechanics are introduced and methods are presented for the analysis of fluid motion in practical engineering problems. Specific topics include: fluid statics; integral balances of mass, momentum, angular momentum and energy; boundary layer theory and introduction to the Navier-Stokes equations; dimensional analysis; and liquid flow in piping networks with pumps and turbines. Pressure and flow measurement and experimental uncertainty. *Prerequisite:* ME 2003 or APSC 1023. *Co-requisite*: MATH 2513.

ME3515 **Fluid Mechanics Laboratory** **1 ch (3L*) [W]**

Laboratory experiments and measurements related to Fluid Mechanics I. Laboratory reports and readings are assigned. *Co-requisite*: ME 3511.

ME3522 **Applied Fluid Mechanics** **2 ch (2C 1T)**

The performance and selection of hydraulic pumps and turbines, the lift and drag on immersed objects, and compressible flow in piping and nozzles. *Prerequisites:* (ME 2413 or ME 3413), (ME 3511 or ME 3513), ME 3515.

ME3524 **Fluid Systems and Design** **2 ch (1C 1L) [W]**

Students work in groups on design projects that apply fluid mechanics. Examples include: pump and turbine selection; piping for conveyance of gases and liquids; gas and steam nozzles; lift and drag on air and water craft, land vehicles and projectiles; fluid forces on solid structures. *Prerequisites:* (ME 2413 or ME 3413), (ME 3511 or ME 3513), ME 3515. *Co-requisite*: ME 3522.

ME3613 **System Dynamics** **4 ch (3C 1L* 1T)**

System concepts. Development and analysis of differential equation models for mechanical, electrical, thermal, and fluid systems, including some sensors. Systems are primarily analyzed using Laplace transforms and computer simulation methods. Analysis concepts cover first, second, and higher order differential equations, transient characteristics, transfer functions, stability, dominance, and frequency response. Properties of systems: time constant, natural and damped frequency, damping ratio. *Prerequisites:* (ME 2003 or APSC 1023), (CS 1003 or CS 1073), (ECE 1813), MATH 3503. *Recommended:* ECE 2701.

ME3623 **Automatic Controls I** **4 ch (3C 1L* 1T)**

Philosophy of automatic control; open loop, sensitivity, components of a control loop; closed loop control, error analysis. Design of P, I, PI, and PID-controllers based on closed-loop specifications. Stability criteria: Routh-Hurwitz. Lead/lag controller design using Root Locus and Bode diagrams. Sensor frequency response to classical inputs. Application of electronics and sensors to control systems based on frequency response. Basic digital analysis including digitization, sampling, aliasing, A/D and D/A devices, and phase loss due to time delays. *Prerequisite:* ME 3613.

ME4283 **Manufacturing Engineering II** **4 ch (3C 3L*)**

Principles and physical phenomena of the basic manufacturing processes. A review of the attributes of manufactured products will

precede lectures on forging, sheet metal working, machining and joining. Material behaviour during manufacturing. Processing of polymers, particulate metals and ceramics is presented. Design of manufacturing systems and the design of components based on criteria and constraints of manufacturing systems and equipment is included in each topic area of the course. A combination of lectures and experimental labs round out the course content. *Prerequisites:* (ME 2121 or ME 2122) and (ME 2222 or ME 3222).

ME4421   Applied Thermodynamics   2 ch (2C 1T)

Air standard cycles: Open and closed gas turbine cycles with reheat, regenerative heat exchange and pressure drop. Steam power plants: analysis of vapor power systems, Rankine cycle, reheat and regenerative cycles; binary and nuclear plant cycles, power plant performance parameters, exergy accounting of a vapor power plant. Basic analysis of combined cycle power plants. Refrigeration systems. Properties of gas and vapor mixtures, psychometric principles, air-conditioning processes. Combustion: fuels, chemical equations, experimental analysis and the products of combustion. *Prerequisites:* (ME 2413 or ME 3413), (ME 2415 or ME 3415). *Recommended:* ME 3433, ME 3435, ME 3522, ME 3524.

ME4424   Sustainable Energy Systems Design   2 ch (1C 2L) [W]

Project oriented course dealing with the design of energy systems that meet regional and global energy needs in the 21st century in a sustainable manner. A combination of conventional and renewable energy technologies will be presented, including topics on resources, extraction, conversion, and end-use. The impact of engineering design on the environment, society, and sustainable development is discussed. Projects will focus on the improved design of both conventional and renewable energy systems with the aim of improving overall efficiency while minimizing the environmental and social impact. *Prerequisites:* Finish two out of these three sets (ME 2413 or ME 3413) + (ME 3415 or ME 2415), (ME 3433 + ME 3435), (ME 3522 + ME 3524). *Co-requisite:* ME 4421.

ME4613   Mechanical Vibration   4 ch (3C 3L*)

Review of single degree-of-freedom vibration: free response, damping, forced response. Multiple-degree-of-freedom systems. Design for vibration suppression. Distributed parameter systems; wave propagation. Vibration testing and experimental modal analysis including transducers and FFT analysis. *Prerequisites:* ME 3613 and MATH 3503.

ME4633   Vibration of Continuous Systems   3 ch (3C)

The free and forced vibration solutions for distributed parameter system models are covered in detail. Specific system models considered include strings/cables, rods, beams, plates, membranes and shells. *Prerequisite:* ME 4613.

ME4673   Introduction to Mechatronics   4 ch (3C 2L)

Mechatronics is an integrated approach to mechanical, electronic and computer engineering for the design of "smart" products and "intelligent" manufacturing systems. Fundamentals of mechatronics design, with emphasis on product design and fabrication. Examples of mechanical systems utilizing sensors and actuator technologies, including use of signal conditioning circuits such as filters, amplifiers and analog-to-digital converters. Software design and implementation for process monitoring and logic control. Laboratory experiments give hands-on experience with components and equipment used in the design of mechatronic products. Project to design and fabricate a mechatronic system. *Prerequisites:* ECE 2213 or (ECE 2214 and ECE 2215), ECE 3111, ME 3341, and ME 3613.

ME4683   Mechatronics Applications   4 ch (3C 2L)

Concepts in automating processes. System specifications, components identification/selection, programming and interfacing for system automation and control. Project involving use of PLC or microprocessor technology in a mechatronics system. *Prerequisite:* ME 4673.

ME4703*   Mechanical Engineering Measurements   4 ch (3C 2L)

Discusses a variety of measurement techniques used in Mechanical Engineering. Topics include analog and digital measurement systems, frequency response, calibration and assessment of uncertainty. The focus is on the analysis and design of measuring instruments. Laboratory exercises include measures of time and rate, displacements, stress and strain, force, pressure, flow, temperature, and vibrations. *Prerequisites:* ME 2111 and ME 3613 or permission from the instructor.

ME4860   Senior Design Project   8 ch (1C 2T 4L) [W]

A mechanical engineering design is developed and documented in the form of a technical report. Students normally work in approved teams. Industrial projects are developed in cooperation with industry and may require some period of time on site. University-based projects are developed in cooperation with university faculty. The first stage of this process involves definition of the project topic, background studies, and development of a conceptual design. An oral examination is conducted towards the end of the first term, and a written preliminary report is submitted. In the second term, a detailed design is prepared, the project is completed and orally examined, and a final report is submitted. One of the laboratory weekly hours is designated for a scheduled meeting with project advisor(s). Workshops involve practice exercises, relevant to student projects, on: problem definition and formulation, project planning, teamwork, information and communication; conceptual, parametric and configuration designs; and professional, environmental, social, human factors, and safety aspects of design. Restricted to students who have completed at least 110 ch in their program. *Prerequisite:* ME 3341 and ME 3345. *Recommended Prerequisite:* ME 3524. *Co-requisites:* ME 4861. *Prerequisite for Mechatronics Option students:* ME 4673.

ME4861   Mechanical Health and Safety   1 ch (1C) [W]

Accidents, their effects and causation. Mechanical hazards and machine safeguarding, Temperature extremes. Pressure hazards. Fire hazards, Noise and vibration hazards. Computers, automation and robots. Ethics and safety. *Co-requisite:* ME 4860 or ENGG 4025 or TME 5025.

ME5113   Advanced Solid Mechanics of Composites   4 ch (3C 2L*)

Introduction to stress analysis that deals with anisotropy of stress and general equations of the theory and elasticity. The elastic equilibrium and boundary value problem formulations are considered. Introduction to the modelling of inhomogenous composite solids, the effective moduli theory and the elasticity of laminated and fiber enforced composites, as well as, nanostructured composite theories are covered. *Prerequisites:* ME 2122, ME 3222, and MATH 2513.

ME5122*   Solid State Phenomena   3 ch (3C)

Covers the fundamental aspects of crystallographic structure and their effects on the physical and mechanical properties of solids with emphasis on metallic materials with engineering applications. The importance of selecting alloying elements will be explored to optimize various properties such as but not limited to strength, ductility, fatigue, creep, corrosion, electrical, and magnetic. Construction analysis of binary and ternary phase diagrams, which are critical in alloy design, complemented with computational thermodynamics will be covered. At the end of the course, the students are expected to understand the design and processing of commercial alloys. *Prerequisites:* CHE 2501, ME 3222.

ME5143*   Robot Kinematics   4 ch (3C 2L*2T*)

Structure and specification of robotic manipulators. Homogeneous transformations and link descriptions. Manipulator forward and inverse displacement solutions. Jacobians in the velocity and static force domains. Singular configurations and workspace analysis. An introduction to trajectory planning and manipulator dynamics. Lab experiments explore several robotic manipulators. *Prerequisites:* MATH 2513 and ME 2143. **NOTE:** Credit will not be granted for both ME 5143 and ME 4173.

ME5173*   Advanced Kinematics of Manipulators   4 ch (3C 3L*)

Various methods for solving the forward and inverse displacement problems are described. Particular emphasis is made on the use of screw theory for the derivation of the Jacobian matrix. The selection of alternate frames of reference for describing the Jacobian are also discussed. Methods used in the solution of the inverse displacement problem and the inverse and forward velocity problems for kinematically redundant manipulators are discussed. *Prerequisite:* ME 4173 or ME 5143. *Recommended Co-requisite:* ME 2352.

ME5183*   Industrial Robotics and Automation   4 ch (3C 2L*)

Brief introduction to robot kinematics including forward and inverse displacement and velocity solutions. An introduction to trajectory planning. Description of common uses of robotics in the manufacturing industry. Description and differences between soft and hard automation particularly in material handling systems. Fundamentals of sensors, actuators and controllers. Examples of automated machinery conveyor systems, feeder systems and packaging systems. Lab introduces different components of a flexible manufacturing systems. Graduate students enrolling in this course must submit an additional project in order to receive credit for this course. *Prerequisites:* CS 1003, MATH 1503, ME 2143 and (ECE 2701 or ECE 2711).

ME5223*   Finite Element Analysis   3 ch (3C)

Introduction to the basic concepts of finite element analysis (FEA) including domain discretization, element types, system matrix assembly, and numerical solution techniques. Application of FEA to solve static, dynamic and harmonic problems of linearly elastic solid bodies and heat transfer will be covered in detail. Graduate students enrolling in this course must submit an additional project in order to receive credit for this course. *Prerequisites:* ME 2122 and ME 3613 and MATH 3503 and (CS 3113 or CE 3933 or CHE 2418).

ME5233*   Metal Forming Analysis   3 ch (3C)

Mechanical and metallurgical analysis of different metal forming processes such as forging, rolling, extrusion, deep drawing, wire drawing

along with sheet metal forming analysis and forming limit diagram calculation. *Prerequisites:* ME 3341 and ME 4283.

ME5243*   **Machining Theory and Practice**   **4 ch (3C 3L)**

The fundamentals of metal cutting theory will be examined with particular emphasis on understanding cutting forces, stresses, strains, strain rates, and temperatures during the cutting process. Tribological issues, tool wear, and tool life will also be presented. Tools typically available to the manufacturing engineer such as Computer-Aided Design (CAD), Computer Aided Manufacturing (CAM), and Computer Numerical Control (CNC) Programming will compromise a significant portion of the course. Using the machine shop in the Mechanical Engineering Department, students will extend classroom concepts to practical scenarios and situations on the machine shop floor. *Prerequisite:* (ME 2222 or ME 3222). *Co-requisite:* ME 4283.

ME5253*   **Codified Design and Failure Analysis**   **4 ch (3C 3T*)**

This senior level course examines the application of mechanical design to engineering practice. In particular, the course will examine codified design of steel structures and the analysis of common failures that occur in service. *Prerequisite:* ME 3341. *Co-requisite:* ME 4613.

ME5283*   **Micro/Nano Manufacturing**   **3 ch (3C)**

Review of principles and practices of micro/nano fabrication technologies with research and industrial perspectives. Introduction to micro/nano fabrication and its applications in MEMS/NEMS, renewable energy and biomaterials; materials selection; silicon processing; lithography process; thin film fabrication; advanced lithography process; characterization and micro/nano measurement techniques; atomic force microscopy and its applications. *Prerequisites:* CHE 2501 and (ME 3222 or ME 2222).

ME5353*   **Fracture Mechanics**   **3 ch (3C)**

Principles of fractures mechanics and fracture analysis of engineering structures. Plane elasticity and mathematical methods to determine the elastic stress, strain and displacement fields. Fracture criteria and their limitations. Elastic-plastic fracture mechanics, J integral and COD. Fatigue fracture and S-N curve. *Prerequisites:* ME 3341.

ME5493*   **Internal Combustion Engines**   **4 ch (3C 3L*)**

The thermodynamics of internal combustion engines is introduced and applied to reciprocating spark ignition and compression ignition engines. The performance of each engine type is studied experimentally. The mechanical design of reciprocating engines is also examined. *Prerequisite:* ME 3423 or ME 4421.

ME5503*   **Application of Computational Fluid Dynamics to Industrial Processes**   **3 ch (3C)**

General CFD topics such as grid topologies, discretization methods and errors, pressure-velocity coupling, solution methods for non-linear equations, and popular solution schemes such as the SIMPLE based methods. Introduction of extensions to core CFD techniques for a wide range of industrial applications, including turbulence models, multiphase flow models for problems in cavitation, boiling/condensation, and solidification/melting. Role of properties in CFD models, as related to non-Newtonian fluids, real and ideal properties for compressible flows, and combustion applications. *Prerequisites:* ME 3433, ME 3522.

ME5534*   **Experimental Methods in Fluid Dynamics**   **4 ch (3C 3L*)**

This course will cover topics including the methodology, measurement uncertainty, and signal processing associated with fluid dynamics measurements. Various means of measuring pressure, velocity and visualizing flow will also be discussed. *Prerequisites:* ME 3511, ME 3515. *Co-requisite:* ME 3522.

ME5553*   **Ocean Wave Energy Conversion**   **4 ch (3C 2L)**

Introduction to the fundamental concepts of ocean wave energy conversion. Topics include: ocean wave mechanics, the wave energy resource, basic wave energy conversion techniques, analytical and experimental modelling of wave energy converter, power take-off systems, and environmental impact assessment. *Prerequisites:* ME 3613 and ME 3522.

ME5578*   **Low Speed Aerodynamics**   **4 ch (3C 1L)**

Fluid mechanics principles will be applied to describe external flow of incompressible gasses and liquids. Emphasis will be placed on techniques used to predict aerodynamic forces and moments on aircraft. Applications include aerofoils of infinite span, wing of finite span, aerodynamic design considerations, and high lift devices. Other applications include the aerodynamics of wind-turbines and submarine hydrodynamics. An introduction to computational aerodynamics will also be given. *Prerequisite:* ME 3522.

ME5588*   **High Speed Aerodynamics**   **3 ch (3C)**

The principles of thermodynamics and fluid mechanics will be applied to describe external flow of compressible gases. Applications include two dimensional aerofoils, slender wings, aircraft and ballistics. *Prerequisite:* ME 3522.

ME5622*   **Human Factors Engineering**   **3 ch (2C 3L)**

An interdisciplinary study of the interaction of humans and their workspace. Physiological principles of work and energy. Anthropometry. Biomechanics. The ergonomics of workspace and job design. Fatigue. Work/rest schedules and nutrition. The physiological and psychological effects of human noise, vibration, lighting, vision, and the workspace environment. Lab periods include seminars and practical design exercise applying human factors and ergonomic theory to workspace problems. *Prerequisite:* Restricted to students with at least 65 credit hours.

ME5643*   **Automatic Controls II**   **4 ch (3C 2L*)**

The first half of the course is an introduction to digital control. Emphasis is placed on understanding the relationships between analog and digital techniques. The second half concentrates on developing the basic mathematical framework for state space control. Several powerful abstract mathematical tools such as the projection theorem are introduced. *Prerequisite:* ME 3623 or ECE 3312.

ME5653*   **Predictive Control and Intelligent Sensors**   **4 ch (3C 3L*)**

Study on the design and practical implementation of model predictive controllers and intelligent sensors for industrial type processes. Topics to be studied include sensor selection and instrumentation, signal processing and conditioning, process modelling and identification, computer interfacing, predictive control, optimization techniques, algorithm design and intelligent sensor modelling. The course is project oriented and includes the use of Matlab and LabWindows CVI software. *Prerequisite:* ME 3623 or CHE 4601 or ECE 3312.

ME5673   **Acoustics**   **3 ch (3C) [W]**

Review of single degree of freedom oscillators, vibration of strings and bars. Topics include: the acoustic wave equation, transmission phenomena, pipe cavities and waveguides; resonators, ducts and filters; environmental acoustics and an introduction to aeroacoustics (time permitting). *Prerequisites:* ME 3522, ME 4613.

ME5713*   **Nondestructive Testing**   **4 ch (3C 3L*)**

Principles of nondestructive evaluation, acoustic emission techniques, ultrasonics, microwave methods, electromagnetic probes, penetrating radiation. *Prerequisite:* A first year course in Physics or APSC 1023 or ENGG 1082. Restricted to students with at least 100 credit hours.

ME5813*   **Special Topics in Mechanical Engineering**   **1 ch**

Provides selected students an opportunity to either study concepts of a newly developed course or complete an independent project in association with an undergraduate course within the department. Permission of both the instructor of the associated course and the director of undergraduate studies is required.

ME5833*   **Special Topics in Mechanical Engineering**   **3 ch**

Provides selected students an opportunity to either study concepts of a newly developed course or complete an independent or group-based course of study within the department. Permission of both the instructor of an associated course and the director of undergraduate studies is required.

ME5913*   **Biomechanics I**   **4 ch (3C 2S)**

A number of topics in biomechanics are examined. Of particular interest is the mechanics of joints, and relation of the internal mechanics of joints to externally applied loads. Analysis techniques are introduced to facilitate analysis of the problems addressed in the course. *Prerequisite:* 100 credit hours.

ME5933*   **Industrial Ecology and Sustainable Engineering**   **3 ch (3C)**

The goal is to develop awareness and knowledge on forward-looking thinking of interaction of technology with human induced transformation of materials and energy from the perspectives of environment and sustainability. Topics include: humanity and technology; concept of sustainability; key questions of industrial ecology and sustainable engineering; status of resources; technology and risk assessment; introduction to life cycle assessment (LCA); LCA impact assessment and interpretation; streamlining the LCA process. *Prerequisite:* Available to all students across engineering disciplines who have completed at least 100 credit hours in their engineering programme.

ME5953*   **Embedded Flight Control Systems**   **4 ch (3C 3L)**

Describes the aerodynamic foces, moments and propulsive thrusts which act on fixed wing model aircraft. Stability, control, and flight performance characteristics are also investigated. Development of a system model and theoretical control algorithm tailored for the characteristics of a specific model airplane. Each student will use this knowledge to develop an embedded firmware-based control system to provide some autopilot features to a model airplane. *Prerequisite:* ME 3522, ME 3623.

MEDIA ARTS AND CULTURES

See beginning of Section H for abbreviations, course numbers and coding.

MAAC1001 Understanding Media I: Technology and Culture   3 ch

Provides an introduction to the study of media, technology and culture. Surveys a variety of contemporary media forms, from print to radio to film, television and the internet, considering their history, their impact on modern culture, and their present state in the digital age. Course may be taken on its own but is designed to be combined with MAAC 1002 for a complete introduction to the study of media and culture. Students who have already completed MM 1001 for credit may not enrol in MAAC 1001.

MAAC1002   Understanding Media II: Power and Pleasures   3 ch (LE)

Complementing material covered in MAAC 1001, this course presents a more hands-on approach to critical media studies by introducing students to basic concepts in semiotics and close analysis of media texts. Lectures will cover notions of signs and signification, the way codes and conventions contribute to socially-constructed meaning, as well as the personal, political and cultural implications embedded in all media constructions. Students will learn to break down and analyze magazines and television ads, music clips and movie posters, websites and viral videos, isolating how each of these texts convey messages and reflect the values and assumptions of the world that produced them. In addition to tests and written assignments, students will complete individual projects that will apply what they have learned to communicate critically and creatively via digital media. Students who have already completed MM 1002 for credit many not enrol in MAAC 1002.

MAAC1021   Introduction to Culture, Arts, and Media   3 ch (3C) [W]
(Cross-Listed: CCS 1021)

An interdisciplinary exploration of the pivotal role which culture, media, and the arts play in shaping understandings of the world around us. By considering a variety of cultural expressions, creative and artistic practices, and media representations, both old and new, from around the globe, this introductory course invites students to open up to new ways of thinking about how culture is created and continually contested, and is ultimately central to how we experience our lives. Required for CCS Majors and Honours students.

MAAC1023   Media, Technology, and Creativity   3 ch (3C) [W]

The complex interplay of arts, culture, and technology supplies the subject matter for a critical and creative engagement with contemporary digital culture. Students are introduced to key concepts in media studies through a series of topical modules while also working individually and in groups in a creative environment with an array of digital media tools used in the wider Media Arts & Cultures curriculum.

MAAC1041   Social Media Studies (A)   3 ch (3C) [W]

Explore introductory media studies concepts and skills through the study of social media. Sample topics include identity and representation online; the role of images and influencers; privacy, profiling and monetization; social media communities and connections; memes, games and social sharing; fake news and filter bubbles; and social media's role in social movements and social justice. In addition to course readings, class discussions, and writing assignments, engage in short exercises that make use of social media and prompt reflection on their role in one's own life.

MAAC2021   Popular Culture (Cross-Listed: CCS 2021)   3 ch (3C) [W]

This course introduces historical and theoretical contexts for the study of mass-mediated popular culture, from movies and TV to comic books and video games. It also explores the reciprocal relationship between creative expression and economic constraints, between the mainstream, sub-cultures, and counter-cultures, as well as familiar designations of "high-brow" and "low-brow." Using specific media case studies, students will engage with contemporary debates about the impact of representations, the role of ideology, the agency of the audience, the meaning of fandom, and the politics of taste. While learning to analyze and evaluate their relative merits, students will learn to step back and think critically about the larger implications and the cumulative effects of our constant exposure to popular culture texts. Students who have already completed MM 2021 for credit may not enrol in MAAC 2021.

MAAC2022   The Art of Film (Cross-Listed: FILM 2022)   3 ch (3C) [W]

Introduces students to the language of motion pictures and to critical tools for discussing and writing about the 7th art - the art of film. By studying how movies function aesthetically, and how they become meaningful to audiences, students will acquire critical and formal analytical skills that will both enhance their appreciation for cinema and serve them more broadly as consumers and/or producers of visual culture. Topics will include mise-en-scène, framing, image composition, photographic space, colour, editing, sound, and narrative structure. **NOTE:** Students can obtain credit for only *one* of FILM 2022 and MAAC 2022.

MAAC2095   Introduction to Video Games (O)   3 ch (3C) [W]

An introduction to the study of games as interactive electronic and digital media. Topics may include the history of computer games and videogames, game genres, the current structure of the games industry, and an overview of game studies as an academic field. Assignments may include both written work and creative media projects. No previous experience with digital games is required.

MAAC2666   Celebrity and Mass Media in Latin America (O) 3 ch (3C) [W]
(Cross-Listed: CCS 2666)

This course will explore the cultural impact of the selected Latin American personalities that have had a significant influence on the notions of identity in Argentina, Colombia, Cuba, Mexico and Venezuela. We will study the personalities of Eva Peron, Pablo Escobar, Che Guevara, Frida Kahlo, Selena and Hugo Chavez through film, music, literature, print media, the Internet and television series. Students will also examine the impact of the public figures' death both at the local and the international level. Students who have taken CCS 3555 may not obtain credit for CCS 2666 or MAAC 2666.

MAAC2797   Rock and American Popular Music   3 ch (3C)
(Cross-Listed: MUS 2797)

This course is a survey of the history of Rock music from its origins in the late nineteenth century to the present day. Topics addressed include: the effects of technology in the music industry, role of African-American music in the development of popular music, the developments of Jazz, R&B, and early Rock and Roll, and the "white appropriation" of African-American music. The course finishes with a survey of recent trends of disco, new wave, heavy metal, rap and alternative music. Restriction: Credit may not be obtained for both FNAT 2792 and MAAC 2797.

MAAC2998 Digital Film Production I (Cross-Listed: FILM 2998)   3 ch (3C)

An introduction to the fundamental concepts and procedures of visual and audio production, including the techniques and aesthetics of shooting, lighting and editing. Over the course of the term, students will engage in a series of short exercises covering a variety of styles, genres and modes. Taught cooperatively with the New Brunswick Filmmakers' Co-op. **NOTE:** Students can obtain credit for only *one* of the following courses: FILM 2998, MAAC 2998, FILM 3999 "Video Production", MAAC 3999 "Video Production", ENGL 3999 "Film and Video Production". Students may take both MAAC 2998 (or FILM 2998) and MAAC 3999 "Editing and Post-Production" (or FILM 3999 "Editing and Post-Production").

MAAC2999   Digital Film Production II   3 ch (3C)
(Cross-Listed: FILM 2999)

This second course in the production sequence puts emphasis on application of skills learned in MAAC 2998 by focusing on production of several short projects in various formats. Group work and analysis of student productions constitute the main course activities. Taught cooperatively with the New Brunswick Filmmakers' Co-op. **NOTE**: Students can obtain credit for only *one of* of FILM 2999, MAAC 2999, FILM 3998, and MAAC 3998.

MAAC3001   Media Arts (A)   3 ch

Surveys artists' engagement with electronic and digital media, as well as media institutions, from the early 20th century avant-garde to the present. Topics may include Dada, Surrealism, Andy Warhol, experimental cinema, video art, modernism, postmodernism, electronic music, remix culture, art and public space, and new media art. In addition to traditional assignments and tests, students will complete individual and group creative projects. Students cannot obtain credit for both MM 2001 and MAAC 3001. Students who have already taken MAAC 2001 may not obtain credit for MAAC 3001.

MAAC3003   Click Here! Interactivity on the Web   3 ch (LE)

The use of web applets that advertise, entertain or inform is ubiquitous, and a lexicon of good practice is developing. The course introduces the problem of designing web-browser-based interactive modules that are human-friendly. Through the completion of individual projects, students will use Flash® or HTML5 to display text, images, and computer-generated graphics as well as techniques to control the presentation of material in response to how people interact with it. Open to students who

have completed 45 credit hours, or with permission of the instructor. Students who have already completed MM 3003 for credit may not enrol in MAAC 3003.

MAAC3021   **Culture Matters: Critical Approaches to**   **3 ch (3C) [W]**
Studying Culture (Cross-Listed: CCS 3021)

Offers critical interdisciplinary approaches to understanding culture through examination of key concepts, theories and practices in the field of Cultural Studies. Required for CCS and MAAC Majors and Honours students.

MAAC3055   **Gender and Media (A)**   **3 ch (3C) [W]**

Investigates key issues and theoretical approaches in the study of gender and media, with a particular focus on the ways in which the popular media texts construct and communicate gender and sexuality. Using theories from media studies, cultural studies, queer studies, and gender studies, this course explores processes and practices of gender in media representations, media production, and media consumption. Through readings, class discussions, presentations, and projects, students gain insight into the way in which gender and its interactions with sexuality, race, ethnicity, class, ability, age, and many other dynamics significantly impacts our cultural formations and media experiences. Open to students who have completed 45 ch, or with permission of the instructor.

MAAC3056   **Queer Media and Culture (A):**   **3 ch (3S) [W]**
(Cross-Listing: CCS 3056)

Explore how queer identities are shaped, performed, and represented across media and cultures. Learn how lesbian, gay, bisexual, trans, intersex, asexual, two spirit, queer and questioning people have been represented and have represented themselves across various media in reent decades in the Canadian and international contexts. Examine how queer theory works to disrupt traditional notions of gender, sex, sexuality, pleasure, and bodies, and what this means for queer community making.

MAAC3057   **Advertising and Consumer Culture (O)**   **3 ch (3C) [W]**
Traces the origins, transformations, and current landscape of consumer culture, especially in relation to the role and impact of advertising as a form. Topics may include postmodern culture, consumer identity, gender and representation, viral marketing, activism, and resistance. Open to students who have completed 45 credit hours, or with permission of the instructor.

MAAC3065   **The Thrill of Fear: Horror Narratives**   **3 ch (3C) [W]**
Across Media & Cultures (A)
(Cross-Listed: CCS 3065)

Why have people in so many times and places enjoyed spooky stories? What, if any, value can we assign to tales of horror and the supernatural? Do ghost stories and monster movies differ across nations and cultures? Questions like these will guide our global study of gothic, horror and supernatural texts chosen from a wide array of media, from literature and cinema, to television, comic books, and video games. Topics may include visual culture and the sublime, Freud's notion of "the uncanny," Jungian archetypes, gender identity, conceptions of ritual and myth, the modern and the postmodern, subcultures, folklore, religion and secularization. Open to students who have completed 45 credit hours, or with permission of the instructor. Students who have already completed MM 3065 for credit may not enrol in MAAC 3065. Students who have taken WLCS 3065 may not attain credit for MAAC3065.

MAAC3066   **Trauma and Seduction:**   **3 ch (3C) [W]**
Early German Cinema (A)
(Cross-Listed: CCS 3066, FILM 3066)

Beginning with the earliest silent movies and concluding with National Socialist propaganda films, this course offers an introduction to a prolific and important era in German film history: the Weimar Republic and pre-WWII period, 1918-1939. Our discussions will situate the films within larger political and cultural discourses. Emphasis will be placed on such topics as the cinematic response to the trauma of WWI; German national identity; expressionism and modernity; the politics of gender and sexuality; the impact of sound on film aesthetics; the relationship between cinema and other media; the ethics of film production. Films to be studied include features by directors such as Lang, Lubitsch, Murnau, Pabst, Riefenstahl, Sagan, von Sternberg and Wiene. In English. **NOTE:** Students can obtain credit for only *one* of GER 3066, WLCS 3066, CCS 3066, FILM 3066, and MAAC 3066.

MAAC3072   **Contemporary German Cinema and Media (O) 3 ch (3C) [W]**
(Cross-Listed: CCS 3072, FILM 3072)

This course covers recent German cinema and media with a focus on acclaimed productions by new directors for film, television, and streaming platforms. The creative work of women directors, themes, of gender, subjectivity, and intimacy are especially highlighted. Other topics include: The Berlin School and its visual and narrative style, the continued, preoccupation of filmmakers with the nation's past, comedy, satire in

Germany, and the influence of the 1970s (the feminist film movement, the New German Cinema, etc), on the new generation. *Prerequisites:* Open to students who have completed at least 30 ch of university courses or by permission of the instructor. **NOTE:** Students can obtain credit for only *one* of GER 3072, WLCS 3072, CCS 3072, CCS 3074, FILM 3072, and MAAC 3072.

MAAC3075   **Framing Reality: Theory and Practice of**   **3 ch (3C)**
Documentary Media (A) (Cross-Listed: FILM 3075)

This course surveys the history and aesthetics of non-fiction filmmaking from the birth of cinema to the digital age. It will examine epistemological and ethical questions raised by documentary's encounter with reality and its attempt to present "the truth." Films screened are drawn from an array of nations and range from the personal to the political as well as more experimental and avant-garde works. The course includes a film production component as students will apply what they have learned in class by producing a short non-fiction film as a final project. **NOTE:** Students can obtain credit for only *one* of MAAC 3075 and FILM 3075. *Prerequisite:* Open to students who have completed at least 45 credit hours at the University level.

MAAC3082   **History of Canadian Cinema [A]**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3082, FILM 3082)

Focuses on the first half-century of filmmaking in Canada and the nation's long struggle to develop and sustain a functioning film industry in the shadow of Hollywood. Readings and screenings trace the history of the movies in Canada from the silent era to the 1970s. Issues raised may include Canadian/American relations, national and regional identities, tensions between art and entertainment, media and cultural policy, representation of race, class, gender, and relation of Canadian film to other media (TV, radio, video) and other arts (painting, music, literature) in Canada. **NOTE:** Students can obtain credit for only *one* of WLCS 3082, CCS 3082, FILM 3082, and MAAC 3082. *Prerequisite:* Open to students who have completed at least 45 credit hours, or with permission of the instructor.

MAAC3085   **Television Studies (A)**   **3 ch (3C) [W]**

This course explores the different approaches used by scholars to understand the cultural role of television in contemporary North American life. Special attention is paid to the impact of new technologies like colour broadcasting, satellite and cable systems, HDTV and the internet. Topics may include TV genres from sitcoms to soap operas, the rise of reality TV, fatherhood and family values, advertising aesthetics, Saturday morning cartoons, Hockey Night in Canada™, and the ethics of the evening news. Open to students who have completed 45 credit hours, or with permission of the instructor. Students who have already completed MM 3085 for credit may not enrol in MAAC 3085.

MAAC3087   **Serials, Franchises and Fandom**   **3 ch (O) [W]**

This course explores the history of storytelling and fandom throughout the 20th and 21st centuries. Topics include "serialitis" during the silent era of film, merchandising and serial promotion, transmedia franchises, fan-made texts, and the building of fan-communities through ongoing narratives. Media discussed may include dime novels, comic books, film, radio, television, video games, anime, podcasts, and online forums. Open to students who have completed 45 credit hours, or with permission of the instructor.

MAAC3095   **Digital Game Studies (A)**   **3 ch (3C) [W]**

Digital games are a major cultural and artistic force in the contemporary media landscape. In this course, students will have the opportunity to consider digital games of various kinds and how they might both relate to and be distinct from the other forms of media. Using critical readings, class discussion and gameplay projects, we will consider competing notions about the nature of games, gaming practices, gameplay, and gaming cultures. No previous experience with digital games is required. Open to students who have completed 45 credit hours, or with permission of the instructor.

MAAC3101   **Media Design I**   **3 ch (LE)**

Explores strategies for creative visual expression across media, working within the constraints of the design paradigm. Topics will include formal design theory, colour theory, basic typography, image construction, and an introduction to visual communications using lectures, assignments, readings, in-class seminars, group discussion and critique. Open to students who have completed 45 credit hours, or with permission of the instructor. Students who have already completed MM 2002 for credit may not enrol in MAAC 3103.

MAAC3102   **Media Design II**   **3 ch (LE)**

Provides an opportunity for students to develop further skills and broaden their understanding of visual communication. Topics will include organizing efficient design systems, producing eloquent moving image typography and developing consistent visual identity programs. The work

and design strategies of leading contemporary practitioners will be examined. *Prerequisite:* MAAC 3101. Students who have already completed MM 3001 for credit may not enrol in MAAC 3102.

MAAC3113   **Music, Computers and Technology**   **3 ch (3C)**
(Cross-Listed: MUS 3113)

The uses of computers in music from a practical and historical perspective is identified and studied. Early uses in notation, composition, presentation, interactive media applications are explored. Project based with work in current Software applications. Open to students who have completed 30 credit hours, or with permission of the instructor.

MAAC3211   **Mobility, Media, and Art (O)**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3211)

This course considers how artists, filmmakers, and writers use mobile media to create various forms of art, including, cellphilms, soundwalks, and micro-blog. In general, mobile media art takes art of the gallery, cinema, and city and puts it into our pockets and, public spaces, and rural environments. Drawing on the mobilities paradigm, we examine how mobile media artists working in screen, digital, and game space challenge usual forms of participation, interactivity, and accessibility. We will also analyze different mobile media art projects both within and outside of the classroom, which may include cellphilms, mobile phone orchestras, soundwalks, and/or soundscapes. Students have the option of creating a cellphilm or soundwalk for their final project.

MAAC3212   **Lens Media I**   **3 ch (LE)**

Examines the principles of still image construction using digital technology. Covers the general theories of light in natural and artificial environments. Introduces notions of colour, form, line and texture as they relate to photographic image making. Workshop activity will provide students with skills in making still images in the studio and the natural environment. *Prerequisites:* Students will have normally have completed 45 ch. Students who have already completed MM 3212 for credit may not enrol in MAAC 3212.

MAAC3213   **Lens Media II**   **3 ch (LE)**

Explores the construction of a single image from multiple still photographs, and the concepts of aspect ratio and information density in image making. Students will examine how these images may be used to build immersive environments, and experiment with presentation technologies that expose consideration of physical and social presence in these environments. *Prerequisite:* MAAC 3212, or permission of the instructor. Students who have already completed MM 3213 for credit may not enrol in MAAC 3213.

MAAC3362   **Sound Design**   **3 ch (LE)**

Sound design, though often overlooked, is an essential aspect of much contemporary media. Course focuses on creativity and technology for recording, editing and mixing sound to engage audiences in film, video, drama and multimedia production. Topics include: technical and artistic application of sound design for film with regards to specific genres, foley artistry, animation, game audio, soundscape design and sound motif. Open to students who have completed 45 credit hours, or with permission of the instructor. Students who have already completed MM 3362 for credit may not enrol in MAAC 3362.

MAAC3401   **Digital Culture**   **3 ch (3C) [W]**

Examines major theories of digital culture and contemporary media. Using examples from a broad range of social, artistic, and cultural practices, the course analyzes the development of digital technologies and their impact on today's culture. Topics and approaches may include cyborg theory, the information economy, convergence, media ecology, virtual worlds, remix culture, and new media aesthetics. Open to students who have completed 60 credit hours, or with permission of the instructor. **NOTE:** Students who have received credit for MM 3107 may not take MAAC 3401 for credit.

MAAC3402   **3D Fundamentals**   **3 ch (3C)**

Discover the fundamentals of creating 3D characters and environments applicable to a variety of media such as games, VFX for film and television, and virtual reality. Develop a foundation in 3D modelling and texturing and build fluency with industry-standard tools and techniques. Gain experience with aesthetic issues of look, style, and critical judgement in visual art. *Prerequisite:* 45 ch of university or permission of the instructor.

MAAC3405   **Media & Environment (O)**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3405)

This course introduces students to the literature of environmental media studies. The media landscape, from television to video games, has a profound role in shaping how we think about nature, the wilderness, and the environment. The news and social media, are also important sources of information about environmental issues. In addition to being crucial sources of information, however, the media create many environmental problems, such as e-waste and carbon emissions. This course reflects on the production, distribution, and associated waste of digital media alongside its role in representing the environment and environmental problems. Teaching methods include lectures and seminars. Students have the option of creating an environmental media project, e.g. a media campaign or short documentary, for their final project.

MAAC3431   **Global Media, Politics, and Power (O)**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3431)

Uses core readings and theoretical frameworks from media studies to examine the complex relationships between media, society, and politics, across the twentieth century and into the new millennium and in global perspective. Topics include media ownership and regulation; media and social movements; censorship and freedom of the press; television and digital culture in emerging democracies; the politics of the popular; media arts and activism. Students who have taken WLCS 3431 may not attain credit for MAAC 3431.

MAAC3435   **Media Culture and Change (O)**   **3 ch [W]**

This cours examines the relationship between residual, in-use, and emergent media technologies, with a focus on the influence of these interactions on culture and identity. Drawing from works by Indigenous, anti-racist, queer, feminist, and environmental media scholars, we will discuss the frequent association of media technologies with major societal upheaval. This course looks at various media, including the quipu and printing press, video games, and twitter, to examine key moments when changing media ecologies influence wider social, political and economic spheres. Topics may include orality, colonialism, innovation, technological determinism, medium theory, and speed. A key aim of the course is to anlayze the materiality of various media technologies. To fulfill this goal, we will participate in a series of in-class activities and experiments, which may include storytelling, using photosensitive paper, creating flipbooks, or other residual technologies.

MAAC3501 to 3509   **Individual Studies in Media**   **3 ch**

Courses of independent study in a topic of special interest to the student, to be taken under the supervision of a Faculty member. Topics will be specified in a written proposal and approved in advance by the Director of Media Arts and Cultures. Students who have already completed a MM 3501-9 course for credit may not enrol in the matching MAAC 3501-9 course.

MAAC3601   **Game Design I**   **3 ch (3C)**

The fundamental challenges of creating interactive gameplay are the subject of this course that introduces students to the processes employed by designers for the creation of a game. Students will interrogate notions of "gameplay" and the evolution of the medium, compare and re-design a variety of existing games, workshop ideas, and create their own game designs. This course is open to students who have completed at least 45 ch at the university level.

MAAC3602   **Game Design II**   **3 ch (3C)**

Building on skills learned in Game Design I, students work in groups to conceptualize and implement a digital game while examining more advanced issues in game design and development from a variety of perspectives. *Prerequisites:* MAAC 3601 or permission of the instructor.

MAAC3793   **East Coast Music (O)**   **3 ch (3C)**
(Cross-Listed: CCS 3793, MUS 3793)

The relationship between music and East Coast identity is the focus of this course that covers a range of music styles, regional differences, and contemporary modes. The theme uniting the various case studies is the importance of music to the region's culture(s). The subject also allows for a broader reflection on music's importance to identity. Topics may range from Cape Breton fiddle, through Halifax hip-hop.

MAAC3795   **Dark Futures: Visions of Dystopia**   **3 ch (3C)**
since World War I (O) (Cross-Listed: CCS 3795)

Offers an exploration of dystopian literature and film from a broad cross-section of cultures over the past 100 years or so. Based on an examination of texts by authors such as Karel Capek, Evgeny Zamiatin, Paolo Bacigalupi, and Sandra Newman and films such as Stalker, Late August in the Hotel Ozone, and Battle Royale, students will consider how dystopias reflect, respond to and anticipate totalitarianism, environmental degradation, dehumanization, and other social, political, cultural and technological challenges facing humanity.

MAAC3999   **Editing and Post Production (A)**   **3 ch (3C/WS)**
(Cross-Listed: FILM 3999)

An intensive hands-on course in the theory and application of post-production techniques for digital filmmaking and video production, with a focus on editing for narrative film. The course covers history of film editing, basic techniques, best practices, and changing technologies. Grading is principally based on creative assignments that grow out of

engagement with this material. **NOTE:** Students who already have credit for ENGL 3999 "Film and Video Production" cannot obtain credit for MAAC 3999 "Editing and Post Production" or for FILM 3999 "Editing and Post Production".

| MAAC4000 | Digital Film Production III | 6 ch (6WS) |
| | (Cross-Listed: FILM 4000) | |

This full year course takes students through the entire process of production of a professional quality short film, from fundraising, budget planning, and pre-production work through the shoot to the final edit and on to the marketing and submission of the film to festivals. Students work together as a production team, taking on a variety of responsibilities while supervised by the instructor. *Prerequisites:* MAAC /FILM 2999 or permission of the instructor.

| MAAC4001 | Advanced Production | 3 ch (3C/WS) (LE) |
| | (Cross-Listed: FILM 4001) | |

Students produce more complex films, developing a project from beginning to end, working on each other's projects, and gaining hands-on experience in a variety of skilled positions on a film's crew. **NOTE:** Students can obtain credit for only *one* of MAAC 4001 and FILM 4001. *Prerequisite:* MAAC, 2999, FILM 2999 or permission of the instructor.

| MAAC4021 | Advanced Studies in Popular Culture (A) | 3 ch (3S) [W] |
| | (Cross-Listed: CCS 4021) | |

Seminar focusing on theoretical approaches to the study of popular culture. Topics and theories covered may rotate from year to year. *Prerequisites:* 60 ch and MAAC/CCS 2021, or permission of the instructor.

| MAAC4025 | Advanced Seminar in Digital Culture (A) | 3 ch (3S) [W] |

Explore theoretical approaches to the study of digital cultures and technologies within a media studies context to build better understanding and critical engagement with the digitally mediated aspects of our lives. Topics and theories covered include analog and digital media forms and phenomena; digital identities and embodied intimacies; creativity and remix cultures; popular culture representations of digital cultures; online communities and connections; and issues around digitial inequalities, access and activism. *Prerequisites:* 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor.

| MAAC4401 | Animation Principles (A) | 3 ch (LE) |

Examines animated image making across a variety of media (film, TV, games), all of which rely on the Phi Phenomenon identified in Gestalt theory. Small project assignments will introduce students to some common animation tools and course discussions will focus on the application of animation concepts to storytelling. *Prerequisite:* Students will normally have completed 60 ch. Students who have already completed MM 4401 for credit may not enrol in MAAC 4401.

| MAAC4404 | Mobile Media (A) | 3 ch (3S) |

This course explores the impact and influence mobile devices have had, and continue to have, on patterns of life, work and play. Examines the unique media forms and characteristic experiences emerging from the use of smart phones, tablets and other handheld digital devices. Discussions, readings and assignments encourage critical reflection on the relationship between technology and culture in a mobile world. *Prerequisite:* 60 ch, or permission of the instructor.

| MAAC4405 | Creative Mobile App Design (A) | 3 ch (3C) |

The course provides an overview of principles of human interface design associated with creating, designing, and prototyping applications for the iPod®, iPhone® & iPad®. Topics covered may include gaming, augmented reality, creative play, or information presentation. Students will explore practical problems associated with planning game-play scenarios, integrating computer-generated imagery, or creating well-designed information displays for mobile devices. Individual and group project work will focus all the steps needed to produce a finished prototype for the app. Mobile devices will be provided for classroom use. Open to students who have completed 75 credit hours, or with permission of the instructor.

| MAAC4951 | Professional Practice | 3 ch |

Individual internship consisting of 80 hours of work in one term on a project for an organization in the community that involves skills and/or ideas directly related to the Media Arts & Cultures program. A faculty member will supervise the progress of the student and a final report on the project undertaken will be evaluated for academic assessment. Subject to faculty and placement availability. The final course grade will be reported as CR/NCR. *Prerequisites:* MAAC 3101, and at least 75 ch completed.

| MAAC4952 | Professional Practice | 3 ch |

An internship consisting of 80 hours of work in one term on a project for an organization in the community that involves skills and/or ideas directly

related to the Media Arts & Cultures program. A faculty member will supervise the progress of the student and a final report on the project undertaken will be evaluated for academic assessment. Subject to faculty and placement availability. The final course grade will be reported as CR/NCR. *Prerequisites:* MAAC 3101, and at least 75 ch completed.

| MAAC4992 | Topics in Media Arts & Cultures (O) | 3 ch (3S) |

An advanced seminar in theory of Media Cultures and/or practice of Media Arts. Topics will vary from year-to-year. *Prerequisites:* 75 ch, and MAAC 3401, or permission of the instructor. **NOTE:** Students who already have credit for MM 4992 may not enrol in MAAC 4992.

| MAAC5000 | Honours Thesis | 6 ch [W] |

A reading and research course open to students qualifying for Honours in Media Arts & Cultures. To enrol in this course, students must first arrange for a professor to supervise their thesis. The course will result in the writing of an Honours Thesis, normally 40-60 pages in length. Student may not enrol in both MAAC 5000 and MAAC 5980.

| MAAC5980 | Honours Project | 6 ch [W] |

A reading, research and creative practice course open to students qualifying for Honours in Media Arts & Cultures. To enrol in this course, students must first arrange for a professor to supervise their project. The course will result in the creation of a Media Arts Project along with a 10-15 page Project Paper. Students may not enrol in both MAAC 5000 and MAAC 5980.

MODERN GREEK

See beginning of Section H for abbreviations, course numbers and coding.

| GRKM1003 | Modern Greek I | 3 ch (3C) |

Introduces language skills which will enable students to speak, read and write the language of modern Greece.

| GRKM1013 | Modern Greek II | 3 ch (3C) |

Further develops Modern Greek language skills as introduced in GRKM 1003. *Prerequisite:* GRKM 1003

| GRKM2003 | Intermediate Modern Greek I | 3 ch (3C) |

A course designed to build and develop reading, writing, listening and oral skills acquired at the introductory level. *Prerequisite:* GRKM 1013 Modern Greek I or equivalent.

| GRKM2013 | Intermediate Modern Greek II | 3 ch (3C) |

A course designed to further develop comprehension and oral skills and improve speaking and writing ability. *Prerequisite:* GRKM 2003 Intermediate Modern Greek I or equivalent.

| GRKM3003 | Beginning Advanced Modern Greek | 3 ch (A) (3C) |

A beginning advanced course for students who wish to improve their language skills in Modern Greek. The course offers a balanced practice of oral, aural, reading and writing skills, allowing students to consolidate and extend their prior knowledge of the language. *Prerequisite:* GRKM 2013 or a placement test. Students who successfully complete the course will be in a position to take the A1 level of the common European Framework of Reference (CEFR) to acquire an official certification in the Greek Language.

| GRKM3013 | Advanced Modern Greek | 3 ch (A) (3C) |

An advanced course for students who wish to improve their language skills in Modern Greek. The course offers a balanced practice or oral, aural, reading, and writing skills so that student can acquire a deeper sense of the Greek languages, extend their vocabulary and practise their language acquisition skills using material (TV series, e-press, songs, and everyday documents). *Prerequisite:* GRKM 3003 or a placement test.

MUSIC

See beginning of Section H for abbreviations, course numbers and coding.

| MUS1001 | Music Through the Ages | 3 ch (3C) |

This course examines the role of music in the social, ceremonial, spiritual, and everyday lives of people in the western world over the last two millennia. It provides an overview of how people in successive eras experienced music and the influences that initiated changes in and perceptions of music. Many of the great musicians, composers, and styles of western music culture are studied. This course serves as a foundation for other studies in music and music history. Normally this course is taught online.

MUS1002   **Music of the World (A)**   **3 ch (3C) [W]**

This course allows students to develop an understanding of world cultures through the musical traditions and habits of people in different parts of the globe. Students will investigate the development and historical background of world music traditions and the typical musical instruments and representative musicians in various regions. Students are also encouraged to develop their perspective on the relationship between music and society. No prerequisite. Normality this course is taught online.

MUS2113   **Introduction to Music**   **3 ch (3C) [W]**

An introductory course investigating music theory and performance, for students with limited or no music background. Content includes notation in treble and bass clef, rhythmic notation, basic music theory, music terminology and various aspects of performance. May require concert attendance. No prerequisite.

MUS2114   **Introduction to Music Appreciation**   **3 ch (3C)**

Introductory course in music appreciation for the classical music lover with little or no music background. This course covers elements of music, performing media, and historical music periods from the Middle Ages to the Twentieth Century. The student will be introduced to music terminology, important composers and will develop listening skills. May require attendance to a symphony and additional lab fee. Restriction: Credit may not be obtained for both FNAT 2123 and MUS 2123.

MUS2123   **Music Theory I**   **3 ch (3C) [W]**

Introductory course in music theory for those students with some musical background. Content includes notation, time values, major and minor scales, intervals, chords, simple time, transposition, terms and signs, music analysis, ear-training and rhythm studies. Restriction: Credit may not be obtained for both FNAT 2123 and MUS 2123.

MUS2124   **Music Theory II**   **3 ch [W]**

This is a second-level course on the fundamentals of music. Content includes rhythmic subdivisions, non-harmonic tones, harmonizing of melodies, secondary chords, principles of chord progression, seventh chords and elementary modulation. Restriction: Credit may not be obtained for both FNAT 2124 and MUS 2124. *Prerequisite*: MUS 2123 or equivalent, or permission of the instructor.

MUS2797   **Rock and American Popular Music**   **3 ch (3C)**
                          (Cross-Listed: MAAC 2797)

This course is a survey of the history of Rock music from its origins in the late nineteenth century to the present day. Topics addressed include: the effects of technology in the music industry, role of African-American music in the development of popular music, the developments of Jazz, R&B, and early Rock and Roll, and the "white appropriation" of African-American music. The course finishes with a survey of recent trends of disco, new wave, heavy metal, rap and alternative music. Restriction: Credit may not be obtained for both FNAT 2792 and MUS 2797.

MUS3000   **Studio Work**   **6 ch (6C)**

Practical work in some aspects of music. Students must seek permission of the Director of Music before registering. Restriction: Credit may not be obtained for both FNAT 3000 and MUS 3000.

MUS3001   **Studio Work/Directed Study**   **3 ch**

Practical or academic work in various aspects of music. Usually project-based in consultation with the Director of Music. Students must seek permission of the Director of Music before registering.

MUS3003   **Studio Work: Private Lessons I**   **1.5 ch (1.5C)**

Practical work in some aspect of music, often in the form of one-on-one lessons to develop knowledge, musicianship and skills on an instrument or voice. Students must seek permission of the Director of Music before registering. Most students will complete both MUS 3003 and MUS 3004. Students who have received credit for MUS 3001 cannot receive credit for MUS 3003.

MUS3004   **Studio Work: Private Lessons II**   **1.5 ch (1.5C)**

Practical work in some aspects of music, often in the form of one-on-one lessons to develop knowledge, musicianship and skills on an instrument or voice. Students must seek permission of the Director of Music before registering. Most students will complete both MUS 3003 and MUS 3004. Students who have received credit for MUS 3001 cannot receive credit for MUS 3004.

MUS3005   **Studio Work: Music Ensemble 1**   **1 ch (1C)**

Practical work in one area of music, to develop musicianship through participation in directed ensembles such as band, choir or orchestra. Students must seek permission of the Director of Music before registering. Most students should expect to take all three of MUS 3005, MUS 3006, and MUS 3007.

MUS3006   **Studio Work: Music Ensemble 2**   **1 ch (1C)**

Practical work in one area of music, to develop musicianship through participation in directed ensembles such as band, choir or orchestra. Students must seek permission of the Director of Music before registering. Most students should expect to take all three of MUS 3005, MUS 3006, and MUS 3007.

MUS3007   **Studio Work: Music Ensemble 3**   **1 ch (1C)**

Practical work in one area of music, to develop musicianship through participation in directed ensembles such as band, choir or orchestra. Students must seek permission of the Director of Music before registering. Most students should expect to take all three of MUS 3005, MUS 3006, and MUS 3007. Students who have received credit for MUS 3002 cannot receive credit for MUS 3007.

MUS3022   **Imperial Vienna (O) (Cross-Listed: CCS 3022)**   **3 ch (3C)**

An exploration of Vienna through its musical heritage and contemporary musical culture. Composers such as Mozart, Haydn, Beethoven and Schubert all made their home in Vienna and wrote some of the most memorable and influential music known. Drawing on the city's history, art and architecture over three centuries, we will examine Vienna's role in the development of Classicism, Romanticism and Nationalism in music history. We will also consider the current music scene in Vienna as present in Jazz and pop festivals, street performances and events. The course will include concerts in historic halls, visits to museums/galleries, and walking tours in the Old City. Taught on location as part of the Travel Study program Vienna.

MUS3023   **Musical Composition**   **3 ch (3C) [W]**

A course in basic elements of composition for students with some musical background and literacy. This course addresses both technical issues and the creative nature of composing music. Musicians who cannot read music are welcome but must have permission from the instructor. Restriction: Credit may not be obtained for both FNAT 3123 and MUS 3123.

MUS3113   **Music, Computers and Technology**   **3 ch (3C)**
                          (Cross-Listed: MAAC 3113)

The uses of computers in music from a practical and historical perspective is identified and studied. Early uses in notation, composition, presentation, interactive media applications are explored. Project based with work in current software and applications. Open to students who have completed 30 credit hours, or with permission of the instructor.

MUS3123   **Berlin to Broadway: Musical Theatre Across**   **3 ch (3C) [W]**
                 the Oceans (Cross-Listed: CCS 3123)

An examination of the life and work of Kurt Weill focusing on his contribution to the theatre culture of Berlin in the twenties and to Broadway in the forties. We will read selected stage works by Weill and his renowned literary collaborators such as B. Brecht and W. Anderson and I. Gershwin, discuss their social relevance, theatrical power, and reception and explore the interplay between the various media: text, music and stage. Emphasis will be placed on the urban cultural context of Berlin, and the history of musical theatre and Broadway musical genres, including current trends. The goal of the course is to provide students with the opportunity to study a theatre composer in depth, to foster a critical appreciation of Weill's unique place in music theatre, and to enrich their understanding of material, cultural and performative aspects of musical theatre. Stage works by Weill may include *The Threepenny Opera, Happy End, The Rise and Fall of the City of Mahagonny, Lady in the Dark, Street Scene, Lost in the Stars*. Other musicals to be discussed may include *Cabaret, Guys and Dolls, Sweeney Todd, In the Woods*. The course and all readings are in English. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students with credit in GER 4033 may not take this course for credit. Students who have taken WLCS 3023, or GER 3023 may not attain credit for CCS 3123.

MUS3133   **Conducting**   **3 ch (3C) [W]**

Basic conducting techniques as applied to wind, string, and vocal ensembles and the interpretation of various types of music. Permission of the Director of Music required before registering. Restriction: Credit may not be obtained for both FNAT 3133 and MUS 3133.

MUS3204   **Music and Cinema (Cross-Listed: FILM 3204)**   **3 ch**

A practical and theoretical examination of the role in music in cinematic narrative from the silent film to the 21st century. The course will examine the origins of the music-cinema relationship from the misnamed "silent film era", through the development of synchronized sound-film systems and the use of music in a selection of genres including film-noir, musical, science fiction, romantic comedy and suspense films. Music video production processes will be explored including the use of narrative storytelling techniques, as well as animation, Claymation, multimedia and experimental methods of creating images to synchronize with existing soundtracks

MUS3765 **History of Music in Medieval and Renaissance** **3 ch (3C) [W]**
Periods (A) (Cross-Listed: HIST 3765)

Introduction to music between 800 and 1600, studying representative styles and putting this music in a historical perspective.

MUS3775 **History of Music in the Late Baroque and** **3 ch (3C) [W]**
Classical Period (A) (Cross-Listed: HIST 3775)

Begins with an examination of the stylistic background of music of the Baroque Period, and follows the development of musical form and style through the late Baroque and Classical eras, i.e. from c.1700-c.1830. Some attention will be given to the role of the musician in the context of the social history of the time.

MUS3785 **History of Music in the Romantic Era (A)** **3 ch (3C) [W]**
(Cross-Listed: HIST 3785)

Traces musical development in nineteenth century Europe in its cultural-historical milieu, mainly in France and Germany. Examines the development of the orchestra, and the French and Austro-German contribution to that development, the role of nationalism in music and the role of the opera.

MUS3793 **East Coast Music (O)** **3 ch (3C)**
(Cross-Listed: CCS 3793, MAAC 3793)

The relationship between music and East Coast identity is the focus of this course that covers a range of music styles, regional differences, and contemporary modes. The theme uniting the various case studies is the importance of music to the region's culture(s). The subject also allows for a broader reflection on music's importance to identity. Topics may range from Cape Breton fiddle, through to Halifax hip-hop.

MUS3794 **Music and Cultural Identity (O)** **3 ch (3C)**
(Cross-Listed: CCS 3794)

This course will examine some of the ways in which cultural (national, regional, ethnic, class, etc.) identity is and has been expressed through music, as well as the origins, persistence, and dispersion of some of the resultant forms and genres. This will also permit us to interrogate the stability and/or fluidity of various notions of identity. Critical and theoretical readings will be employed to explore the identity of cultural groups and musical forms ranging from Tango to Blues, Opera to protest song, Flamenco to Hip Hop, from Hawaii to Russia, Canada to South Africa. The course will normally be team-taught; no previous musical background required. Open to students who have completed at least 30 ch of university courses or by permission of instructor.

MUS3795 **A History of Music in the Twentieth Century** **3 ch (3C) [W]**
(Cross-Listed: HIST 3795)

Begins with an examination of the Post-Romantic composers, particularly Mahler and Strauss. Studies Debussy and the Impressionists, the Second Viennese School (Berg, Schoenberg, Webern) and its impact on twentieth-century music and the tonalist composers of the first half of the century. Examines music as an art form in North America.

MUS3796 **History of Music Dramas of Richard Wagner** **3 ch (3C) [W]**

An examination of the theoretical constructs behind Wagner's music dramas, the compositional histories of some of the dramas of the 1840's, and then of the Ring Cycle itself. Some attention will be given to the performance history of the dramas as well.

MUS3797 **Music of Canada (Cross-Listed: CCS 3797)** **3 ch (3C)**

Introduction to Canada's rich and diverse traditions, institutions, and industry. From the musical traditions of the First Nations peoples, through the music of the early settlers, to today's diversity of styles, Canada's music will be studied in its cultural and historical contexts.

MUS3798 The Forbidden, the Rebellious and the Misunderstood: 3 ch (3C)
Canadian Jazz, Popular and Classical Music, 1950 to the Present (A)
(Cross-Listed: CCS 3798)

This course explores the social and historical developments of music in Canada from the 1950s through the public awakening of the 1960s to the implications of the Canadian content regulations of the 1970s and up to the present with a focus on the period ending around 1980. Music will be examined in relation to such notable phenomena as the Cold War, Expo 67 and the Hippie Movement. Major musical figures, composers and performers featured and discussed may include, The Band, Oscar Peterson, Glenn Gould, Paul Anka, Buffy Saint-Marie, The Guess Who and Rush.

MUS3799 **Women in Music (Cross-Listed: CCS 3799)** **3 ch (3C)**

Tracing the influences of women involved in music in a range of settings in the western world, this course presents the variety of ways that women have influenced, created and performed music through the ages. Feminist perspectives will be explored through an examination of the roles of selected individuals whether they were composers, performers or patrons.

As such the course will include such individuals as Nannerl Mozart, Nadazhda von Meck, and Alma Mahler, as well as composers Clara Schumann, and Fanny Mendelssohn, who were performers in their own right.

NURSING

Nursing courses in the BN, BN ASP programs are not open to students unless they are enrolled in one of these programs. Exceptions to this are NURS 1324, NURS 3052, and NURS 3092.
NOTE: See beginning of Section H for abbreviations, course numbers and coding.

NURS1012 **Introduction to Nursing as a Profession** **4 ch (3C 1T) [W]**

Introduction to the foundations of nursing as a profession, including its heritage and practices. Examines UNB nursing curriculum and philosophy.

NURS1014 **Introduction to the Canadian Health Care System** **2 ch (2C)**

Explores the structure of the Canadian healthcare system. Examines current service delivery issues as they influence nursing and the health of Canadians.

NURS1121 **ASP Introduction to Nursing and Health** **3 ch (3C) [W]**

Introduction to foundations of nursing as a profession including nursing roles, values, and practices. Explores concepts of wellness, health, and illness within the context of the profession of nursing, primary health care and the Canadian Health Care System.

NURS1131 **ASP Helping Relationships** **3 ch (2C 1L/T)**

Explores the helping relationship within the context of nursing practice. Students will develop counseling skills. Includes required Labs and/or tutorials. *Prerequisites*: NURS 1135 and NURS 1136.

NURS1135 **ASP Enhancing Well-Being in Situations of** **3 ch (4C)**
Chronicity

Explores the experiences of people living with chronic conditions and the impact on their capacity to achieve well-being. Examines nursing therapeutics to support and enhance well-being. *Pre-* or *Co-requisites*: NURS 1121 and NURS 1136.

NURS1136 **ASP Practicum: Wellness and Chronicity** **4 ch (4L)**

Complements and supplements NURS 1135 and NURS 1142. Application of wellness concepts as they relate to clients living with chronic conditions. Involves health assessment and application of relevant nursing therapeutics and roles in the institutional setting. *Pre-* or *Co-requisites*: NURS 1121; NURS 1135 and NURS 1142.

NURS1142 **ASP Health Assessment** **4 ch (3C 1L)**

Designed to establish the foundation required for health assessment. Expands the concept of health, health promotion and health lifestyle choices as they apply to health assessment, including health assessment techniques and data interpretive skills. The lab component focuses on the practical application of health assessment. *Co-requisites*: NURS 1136.

NURS1225 **Health and Wellness** **3 ch (3C)**

Explores social, physical, emotional, and intellectual aspects of health, wellness and illness within the framework of primary health care. *Prerequisite*: NURS 1012. Students cannot receive credit for both NURS 1225 and KIN 1081.

NURS1235 **Clinical Practicum: Nursing and Wellness** **3 ch (3L)**

Within various clinical settings, explores the concepts of wellness, health, and illness within the framework of primary health care. *Pre-* or *Co-requisite:* NURS 1225.

NURS1305 **Introduction to Health Assessment** **4 ch (3C 1L)**

Addresses physical and psychosocial assessment throughout the lifespan. Includes lab experiences. *Prerequisite*: NURS 1012.

NURS1306 **Introduction to Helping Relationships** **4 ch (3C 1L)**

Explores the helping relationship within the context of nursing practice. Students will develop counseling skills. Includes required labs and/or tutorials. *Co-requisite*: NURS 1012.

NURS1324 **Indigenous Perspectives on Health and Wellness** **3 ch**

The focus of this course is to build an understanding of Indigenous health, community wellness and cultural safety, to promote equitable health care practice and policy. In this course, students will examine Indigenous models of health and healing, storytelling and tools for allyship.

NURS2063 **Concentrated Clinical Practice I** **3 ch (3L)**

This integrative practice experience will further enhance development of abilities to assess, intervene and evaluate nursing practice while

supporting clients and their families experiencing child-bearing, or those living with chronic health or mental health challenges. *Prerequisite*: NURS 2187.

NURS2132   **Pharmacotherapeutics**   **3 ch (3C)**

Includes theory and principles of pharmacology as they apply to nursing. Provides requisite knowledge to administer medications, provide patient education, and assess potential for adverse events related to drug and lifestyle issues. Theory will include basic legal and safety issues related to drug administration by the nurse. *Prerequisite*: NURS 1235, BIOL 1782 or equivalent or Enrolment in the LPN to BN Pathway.

NURS2133   **ASP Pharmacotherapeutics**   **4 ch (3C 1L)**

Includes theory and principles of pharmacology as they apply to nursing. Provides requisite knowledge to administer medications, provide patient education, and assess potential for adverse events related to drug and lifestyle issues. Theory includes basic legal and safety issues related to drug administration by the nurse. Incorporates increased student support for application of the related concepts. *Prerequisite*: NURS 1136 or permission of the instructor for BMLS students.

NURS2135   **Chronic Health Challenges**   **3 ch (3C)**

Focuses on the impact/influences of long term health challenges on clients. Examines rehabilitative and supporting nursing practice. *Prerequisite*: NURS 1235.

NURS2145   **Mental Health Challenges**   **3 ch (3C)**

Explores the experiences of persons living with mental illness and examines related nursing therapeutics. *Prerequisite:* NURS 1235 or NURS 1306.

NURS2155   **Clinical Practicum I**   **4 ch (4L)**

In various clinical settings, students will be provided opportunities to assess, implement and evaluate care with young families, clients living with mental health challenges or chronic health issues. *Pre- or Co-requisites:* NURS 2135, NURS 2177 and NURS 2145.

NURS2171   **ASP Young Families Health**   **3 ch (3C)**

Explores the factors influencing the ability of young families to achieve health as they define it. Covers the processes involved in establishing and maintaining health of young families particularly as they undergo transitions such as childbearing. *Prerequisite*: NURS 1136. *Co-requisite*: NURS 2172.

NURS2172   **ASP Clinical Practicum: Young Families**   **3 ch (3L)**

In partnership with clients, students will explore family processes, and implement strategies to support the health of young families. This integrative practice experience will provide an opportunity to apply concepts of growth and development, family centred care, health promotion, and communication. *Prerequisite*: NURS 1136; *Co-requisite*: NURS 2171.

NURS2175   **ASP Clinical Practicum: Mental Health**   **3 ch (3L)**

In partnership with clients, students will explore and implement strategies to promote mental wellness. This integrative practice experience will provide an opportunity to apply concepts of assessment, intervention, mental health promotion, illness prevention and support of clients of various age groups experiencing mental health challenges. *Prerequisite*: NURS 1136; *Co-requisite*: NURS 2145.

NURS2177   **Young Families' Health**   **3 ch (3C)**

Focuses on promoting the health of childbearing families. Encompasses the childbearing experience. *Co-requisite*: NURS 2155.

NURS2187   **Clinical Practicum II**   **3 ch (3L)**

In institution and community settings, students will develop and implement strategies to explore, develop, and support positive health behaviours of young families, individuals living with mental health challenges, or chronic health issues. *Pre- or Co-requisites*: NURS 2135, NURS 2177; NURS 2145, NURS 2155.

NURS2217   **Professional Nursing Practice**   **3 ch (3C) [W]**

Builds on the concepts of professional nursing practice gained in Practical Nurse curricula expanding knowledge and practice to the scope of the entry-level Registered Nurse. This course will focus on the communication, professional identity and social justice abilities within the BN curriculum. Particular emphasis on role transition, academic writing and evidence informed practice. *Prerequisite:* Enrolment in the LPN to BN Pathway.

NURS2218   **Enhanced Decision Making in Clinical Practice**   **3 ch (2C 1L)**

Using a case-based approach across the life span, builds on assessment, data collection, pharmacotherapeutics and clinical decision making of

Licensed Practical Nurses. Specific attention will be paid to the abilities of knowledge and its application and critical thinking and skills of analysis within the BN curriculum. Frameworks for recognizing and responding to changes in a client's condition will be introduced (anticipatory thinking). *Prerequisite:* Enrolment in the LPN to BN Pathway.

NURS3065   **Community and Population Health Nursing**   **4 ch (4C)**

Focuses on the role of the nurse in the community and public health nursing, using the population health framework. Addresses principles of community assessment and development, program planning, and other strategies that are supported through a population health perspective, with particular emphasis on populations, and social, political and economic determinants of health. *Prerequisite:* NURS 2063 or NURS 1136. *Co-requisite*: NURS 3066 or NURS 3068.

NURS3068   **Clinical Practicum: Community and Population Health Nursing**   **5 ch (5L)**

Applies a population health focus in community settings with diverse population. *Prerequisite*: NURS 2063 or NURS 1306. *Co-requisite*: NURS 3065.

NURS3072   **Acute Health Challenges**   **3 ch (3C)**

Examines the client's experience of acute health challenges, with the focus on nursing therapeutics. *Prerequisites:* NURS 3065 and NURS 3066 or NURS 3068. *Co-requisites*: NURS 3073 and NURS 3074.

NURS3073   **Clinical Practicum: Acute Health Challenges**   **5 ch (5L)**

In this clinical practice experience, students will have the opportunity to care for clients and families in acute care environments. *Pre- or Co-requisite:* NURS 3072.

NURS3074   **Clinical Practicum: Acute Health Challenges**   **5 ch (5L)**

In this clinical practice experience, students will have the opportunity to care for clients and families in acute care environments. *Pre- or Co-requisite:* NURS 3072.

NURS3082   **Theoretical Foundations of Nursing**   **3 ch (3C W)**

Explores the theoretical foundations of nursing practice and research, including clinical analysis of theories and concepts related to nursing. *Prerequisites:* Completion of first year or permission of the instructor.

NURS3092   **Nursing Research**   **3 ch (3C)**

Critically examines the purpose, processes, and utilization of nursing research. Explores the interaction between theory and evidence-informed practice. *Prerequisites:* STAT 2263 or equivalent, completion of second year.

NURS4113   **Families within Populations**   **3 ch (3C) [W]**

Explores the experiences of families living with complex health challenges from a population health perspective. Focuses on nursing therapeutics with further development of independent clinical judgement and decision making appropriate to primary health care. *Prerequisite:* NURS 3073 or NURS 3103. *Co-requisites*: NURS 4121 and NURS 4123, 4124 or 4125.

NURS4121   **Nursing in Complex Situations**   **3 ch (3C)**

Explores the client's experience of complex health challenges. Examines related nursing therapeutics with an emphasis on clinical judgment and decision making. *Prerequisite:* NURS 3073 or NURS 3103. *Co-requisites*: NURS 4113 and NURS 4123, NURS 4124 or NURS 4125.

NURS4124   **ASP Clinical Practicum: Nursing Families in Complex Situations**   **6 ch (6L)**

This course is designed to provide students with the opportunity to care for families who have at least one member experiencing an acute or chronic illness. Students will be expected to care for families in multiple settings, including their home and hospital. Students will integrate and apply the theory examined in NURS 4113 and NURS 4121 in this practice setting. *Pre- or Co-requisites*: NURS 4113 and NURS 4121.

NURS4125   **Clinical Practicum: Nursing Families in Complex Situations**   **5 ch (5L)**

This course is designed to provide students with the opportunity to care for families who have at least one member experiencing an acute or chronic illness, as well as consideration of the health of populations. Students will be expected to care for families in multiple settings, including their home and hospital. Students will integrate and apply the theory examined in NURS 4113 and 4121 in this practice setting. *Pre- or Co-requisites*: NURS 4111 and NURS 4121.

NURS4153   **Preceptorship**   **12 ch (12L)**

A preceptored clinical experience developed in collaboration with the student. *Prerequisite:* NURS 4125 or NURS 4124. *Co-requisite*: NURS 4185.

NURS4185   **Trends and Leadership in Nursing**   **3 ch (3C)**

Explores trends in the Nursing Profession. Examines organizational theory and leadership roles of nurses. Explores the foundations of professional development and practice. *Prerequisite*: NURS 4124 or NURS 4125. *Co-requisite*: NURS 4153

NURS4234   **Independent Study**   **3 ch (3C/L)**

An independent study program under the guidance of a faculty member is pursued on the basis of student interest in any area of nursing. Faculty approval required.

NURS4242   **Nursing Theory for Exchange Students**   **3 ch (3C)**

The content of the course will be determined by the needs of the visiting student. Nursing students who come on exchange have special needs for theory. This course will provide an avenue for these needs to be covered within a single course.

NURS4252 Clinical Nursing Experience for Exchange Students   **3 ch (3L)**

The content of this course will be determined by the needs of the visiting student. However, it will be developed around a clinical experience in the hospital or community. Nursing students who come on exchange have special needs for clinical experiences. This course will provide an avenue for these needs to be covered with a single course.

PHILOSOPHY

See beginning of Section H for abbreviations, course numbers and coding.

PHIL1101   **Critical Thinking**   **3 ch (3C) [W]**

Improves the ability to analyse and evaluate arguments and assertions met with in everyday life, and hence sharpens skills of reasoning to sound conclusions from available evidence. Does this by studying the classic fallacies that people often commit and using elementary formal logic to explore differences between deductive and inductive reasoning.

PHIL1201   **Ethics of Life and Death**   **3 ch (3C) [W]**

Introduces various ethical theories and examines moral problems including abortion, euthanasia and capital punishment.

PHIL1202   **Tyranny, Violence, and Liberty**   **3 ch [W]**

This course will examine the response that individuals have had to tyrants and violence. Some of those will be considered Plato, the White Rose Group, and Martin Luther King. When Human Rights are violated liberty is at risk.

PHIL1301   **Introduction to the History of Philosophy I**   **3 ch (3C) [W]**

This course offers a general survey of philosophy from the Pre-Socratics to Scholasticism. It will concentrate upon issues central to ancient and medieval philosophy through a look at such figures as Parmenides, Plato, Augustine and Aquinas.

PHIL1302   **Introduction to the History of Philosophy II**   **3 ch (3C) [W]**

This course offers a general survey of philosophy from Rationalism to German Idealism. It will concentrate upon the concerns of modern philosophy by looking at the philosophies of such figures as Descartes, Hume, Kant, Hegel and Marx. Designed to bridge the gap for upper year students.

PHIL1401   **God, Mind and Freedom**   **3 ch (3C) [W]**

This course provides an introduction to three important, interconnected issues in metaphysics. Questions concerning the definition and existence of free will, the nature of the mind and its relation to the brain, as well as whether or not there are good reasons to believe in God, will be explored.

PHIL1501   **Monsters and Philosophy**   **3 ch [C] [O]**

As a category, Monsters challenge our understanding of the normal, the natural, the intelligible and the ethical. In so doing, the study of monsters provides an opportunity to explore the perennial questions of philosophy in a new and interesting way. This course will use monsters as a tool to explore aspects of the three main branches of philosophy: metaphysics, ethics and epistemology. Some of the topics to be discussed will include human nature, the conditions of knowledge, the mind-body problem, artificial intelligence, ethical dilemmas and theories, the metaphysics of identity, and good and evil.

PHIL2201   **Introduction to Ethics**   **3 ch [W]**

This course investigates core problems and key authors in ethical theory. The main focus of the course is to treat the rival theories of eudaimonism, deontology and utilitarianism as they are expressed both in contemporary ethical literature and in their historical context by Aristotle, Immanuel Kant, and John Stuart Mill. We also give some attention to those figures that have influenced their development, such as Plato, Niccolò Machiavelli, Thomas Hobbes, Jeremy Bentham and Jean-Jacques Rousseau. In the last part of the course, we turn to another alternative--the work of Friedrich Nietzsche and his influential critique of much of the Western ethical tradition that preceded him.

PHIL2207   **"Online Only" Ethics For Engineers (O)**   **3 ch (3C) [W]**

The course is directed at individuals who are currently qualified engineers, or to those who have permission of the instructor. It provides a problem-centred approach to engineering ethics, as well as the conceptual and theoretical tools basic to developing the skills for recognizing and addressing ethical issues in the engineering field. Topics include: engineering as a profession, design safety and risk, accidents, confidentiality, conflicts of interest, intellectual property, professional conscience, whistle-blowing, engineering and the environment, computer ethics, and the ethics of engineering research. These concerns are developed in part through analysis of wide ranging, real-life scenarios. PHIL 2207 cannot be used for any credit in the Faculty of Engineering at the University of New Brunswick.

PHIL2501   **Philosophy and Film**   **3 ch [C] [O] [W]**

Film is an incredible medium. Many issues in Philosophy can be explored and explained through the medium of film. This course will examine some philosophical problems occasioned by great films. Some of the topics to be discussed might include free will and determinism, the mind-body problem, just war theory, human nature, and/or ethical theories.

PHIL3101   **Introduction to Symbolic Logic**   **3 ch (3C)**

The techniques of natural deduction, including conditional proof, indirect proof and separation of cases. Emphasizes applications in sentence logic and in the logic of quantification up to the logic of relations. *Prerequisites:* PHIL 1101 or an equivalent with permission of the instructor.

PHIL3204   **Business Ethics**   **3 ch (3C) [W]**

An introduction to moral problems arising in business. The course is designed to introduce the student to ethical theory and its relevance for business decision making. **NOTE:** students can receive credit for only one of PHIL 2203 and PHIL 2204. *Prerequisite:* Students enrolled in the Faculty of Business Administration must have completed 30 ch, including ECON 1013 and ECON 1023.

PHIL3205   **Contemporary Ethical Theory (O)**   **3 ch (3C) [W]**

This course provides a select treatment of some methodological and substantive problems in twentieth-century and more recent ethical theory. The topics range from the challenge of normativity (Moore, Gewirth, Searle, and Koorsgaard), intuitionism (Strawson, McMahon), and egoism (Sidgewick, Parfit) to recent versions of the consequentialist and non-consequentialist debate (Fry, Hooker, Narveson; Thomas Hill, Francis Kamm). We then situate contemporary virtue ethics (especially Nussbaum, Foot, Hursthouse) within the latter debate and consider related discussions of moral luck and situationism as well as their implications for some of these theories. We conclude by surveying some of the emerging literature in experimental philosophy and its contribution to ethical theory. Open to 2nd year students and above.

PHIL3206   **Environmental Ethics**   **3 ch (3C) [W]**

This course covers a range of thinking on a variety of issues concerning the environment. Specific issues addressed are: Do species other than human beings have value in themselves, or only because humans value them? Do non-organic entities possess value? What problems beset attempts to formulate an environmental ethic? Open to 2nd year students and above. **NOTE**: Students can receive credit for only one of PHIL 2206, PHIL 3206, and PHIL 3208.

PHIL3207   **Health Care Ethics (Online)**   **3 ch**

This course provides an introduction to ethical theory and its application to contemporary issues in bio-ethics. There are seven units in this course, which are: Ethical Theory, Relationships in Health Care, Consent, Abortion, Euthanasia, Scarce Medical Resources, and Acquiring and Distributing Body Parts. Note: Students can receive credit for only one of PHIL 3203, and PHIL 3207. Although open to all students, this course does not count toward the Major or Honours requirements for Philosophy students.

PHIL3208   **Ecological Ethics (Online)**   **3 ch**

"Ecological Ethics" explores some of the key ethical issues concerning humanity's relationship to earth. Dominant themes include deciding what has value, criteria for making good decisions, and moral principles for human behaviour toward the world. We shall become familiar with a range of perspectives and positions commonly found in Western environmental debates. The emphasis is on the relationship between theory and practice. Note: Students can receive credit for only one of PHIL 2206, PHIL 3206, and PHIL 3208. Although open to all students, this course does not count toward the Major or Honours requirements for Philosophy students.

PHIL3209   **Health Care Ethics in Canada**   **3 ch (3C) [W]**

An examination of the ethical issues raised by problems in Bioethics, such as experimentation with human subjects, euthanasia, assisted suicide and cessation of medical treatment, patients' rights, informed consent, and tissue transplantation. Open to 2nd year students and above. **NOTE**: Students cannot receive credit for both PHIL 2209 and PHIL 3209.

PHIL3211   **Cyber Ethics (O)**   **3 ch (3C) [W]**

This course provides an introduction to a rapidly emerging field of applied ethics. Among other topics it examines ethical issues concerning autonomous weapons systems, digital intelligence gathering, cyberwarfare, block chain technologies, and digital health.

PHIL3261   **Military Ethics (O)**   **3 ch [W]**

This course examines the questions in military ethics from a philosophical perspective. Is it possible to pursue peace through war? What, if anything, justifies war? How can post-war activities of victors secure or prelude future peace? Do nations have an obligation to defend foreign populations threatened by "crimes against humanity"? Do ordinary ethical imperatives apply to combatants who are not aligned with traditional nation-states? Are ambushes ethically permissible? How should ethics account for emerging technologies, like drone warfare? Is espionage ethically permissible? These questions will be considerd in dialogue with classical and contemporary texts. **NOTE:** Students can receive credit for only one of PHIL 2208 and PHIL 3261.

PHIL3262   **Applied Professional Ethics**   **3 ch (3C) [W]**

Administrators can be found in for-profit businesses, NGOs, schools and universities, hospitals, the armed forces, government, etc. The course strives to address two key questions: "What responsibilities do decision makers in organizations have to others?" and "Why do they have such responsibilities?" Analytical tools presented in the course to help answer these questions will include such approaches as Rawls' distributive justice, Harsanyi's utilitarianism, and Gauthier's morals by agreement, among many others. Students will be expected to understand the justification for each of these tools, apply them to cases discussed in class, and ultimately be able to recommend and defend what actions administrators ought to take according to each method of analysis. In conjunction with the above analytical tools, the course will also introduce a variety of "thinking methods," such as formal logic, thought experiments, and game theory, which underlie the tools. *Prerequisite:* 3 ch in Philosophy, or permission of the instructor. **NOTE**: Students can receive credit for only one of PHIL 2251, PHIL 3251, and PHIL 3262.

PHIL3264   **Ethics (O)**   **3 ch (3C) [W]**

This course introduces the three most basic texts in ethics - works by Aristotle, Immanuel Kant, and John Stuart Mill. Aristotle's approach discusses morality in terms of virtue vs. vice. It focuses on what the virtues are, why they are virtues, and how one becomes virtuous. The works of Kant and Mill, on the other hand, seek to determine what obligations we have to others and why we have those obligations. It is by knowing these obligations to others that we can assess the ethical status of our actions before we take them. The course is theoretical, in the sense that it is devoted especially to answering "why" questions, but it also involves some application to help illustrate key points the ethicists make.

PHIL3301   **Early Greek Philosophy (A)**   **3 ch (3C)**

The period of philosophy beginning with Thales and culminating with Plato. Stresses the development of certain key themes and problems in this period and their influence on later philosophical thought. Half the course is devoted to examining philosophical thought prior to Plato; the other half focuses on Plato's thought. *Prerequisite:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3302   **Later Greek Philosophy (A)**   **3 ch (3C) [W]**

Focuses on Aristotle and subsequent developments in Greek philosophy. Half the course examines different aspects of Aristotle's thought, the other half considers post-Aristotelian schools of thought. *Prerequisites:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3303   **Modern Philosophy I (A)**   **3 ch (3C) [W]**

Introduction to some of the philosophical issues of 17th-century philosophy, such as: philosophical method; the nature, scope and limits of knowledge; the nature of reality; the question of the nature and existence of God. Reference is made to selections from some of the important philosophers of the era--e.g., Descartes, Locke. *Prerequisite:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3304   **Modern Philosophy II (A)**   **3 ch (3C) [W]**

Introduction to some of the philosophical issues of 17th- and 18th-century philosophy, such as: philosophical method; the nature, scope and limits of

knowledge; the nature of reality; the question of the nature and existence of God. Reference is made to selections from some of the important philosophers of the era--e.g., Leibniz, Hume. *Prerequisite:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3305   **Capitalism vs. Communism**   **3 ch (3C) [W]**

This course focuses primarily on the philosophical works of Adam Smith, a founder of capitalism, and Karl Marx, a founder of communism. The socio-political-economic structures they envisioned for society are defined, and the justificatory arguments they provide for their structures are examined. The philosophical foundations of anarchism, feudalism, Leninism, libertarianism, mercantilism, and socialism may also be studied for comparison purposes, time permitting. Open to 2nd year students and above.

PHIL3306   **Kierkegaard, Nietzsche, and the Roots**   **3 ch (3C) [W]**
                      of Postmodernism

Examines the major themes of existential philosophy developed in the nineteenth and twentieth Centuries such as the self, existence, freedom, and relationships with others, and shows how this helped to inform the basis of contemporary postmodernism. References are made to selections from some of the important existential thinkers (e.g. Kierkegaard, Nietzsche, Sartre, Simone Weil, Camus, Arendt, Heidegger), and to important postmodern thinkers (e.g., Derrida, Foucault). Open to 2nd year students and above.

PHIL3307   **Husserl's Pure Phenomenology**   **3 ch (S) [W]**

This course introduces students to the philosophical method of phenomenology. Developed by the German philosopher Edmund Husserl, the method of what he called "pure phenomenology" has determined the character of Continental Philosophy throughout the 20th century. Emerging as a radical break with the philosophical tradition, Husserl's thought provided the method that would determine the course of 20th century existential philosophy and serve as the point of departure for postmodernism. The course will be concerned with the main features of Husserl's thought, particularly his theory of the intentional structure of consciousness, his critique of traditional epistemology, and the foundations and crises of the sciences, as well as his views on the "natural attitude," the "irreality" of "the world," and the "life-world."

PHIL3308   **Plato's Republic (O)**   **3 ch [W]**

This course provides an in-depth study of Plato's most important and influential dialogue--his masterpiece on justice, the Republic. We shall cover all of its major philosophical problems through a close reading of the whole dialogue, also taking account the role of the dramatic element of the dialogue for understanding those problems. Open to 2nd year students and above.

PHIL3311   **Nietzsche on Socrates' Death-Wish**   **3 ch [W]**

Friedrich Nietzsche saw the beginning of western philosophy as the birth of a cultural death-wish glorified in the suicide of Socrates. This course looks at Nietzsche's portrait of Socrates in order to access his perception of ancient Greek philosophy, tragic poetry and culture. In so doing, the course will clarify Nietzsche's attacks on Christianity and Modernity as sources of the nihilism he believed would promote the death-wish of "Socratism." The course will also give some consideration to Nietzsche's confrontation with nihilism in terms of his conceptions of the Will to Power, the Ubermensche, the Revaluation of all Values, the Master Race, and Eternal Recurrence. Open to 2nd year students and above.

PHIL3312 Infinity: Emmanuel Levinas' Encounter with the Other   3 ch [W]

This course will concentrate on the philosophy of Emmanuel Levinas (1906-1995). Initially influenced by Edmund Husserl and Martin Heidegger, Levinas' philosophical path diverged in the direction of Ethics as a radical critique of the traditional view of human beings as "knowing" or "rational" subjects. This course will look at Levinas' ethics both as a critique of traditional and contemporary theories of knowledge and existence, as well as a post-modern critique of western philosophy. These concerns are developed through Levinas' descriptions of our encounter with the "Other" in terms of his investigations into the human face, desire, gift, language, the concern for justice, and God. Open to 2nd year students and above.

PHIL3313   Reason vs. Faith: The Philosophy of Kierkegaard   3 ch [W]

This course approaches Kierkegaard's philosophy through his text Philosophical Fragments. Written by one of the foremost of continental philosophers, this text explores the possibility of something we rarely hear spoken of these days-namely, the possibility of a relationship with absolute, eternal truth. This text will serve as a means to clarifying some of the central features of Kierkegaard's thinking such as: the relationship between reason and faith, the status of the self as a rational identity, the significance of human life within history, the aesthetic, ethical and

religious modes of existence, and indirect communication. Open to 2nd year students and above.

PHIL3315   Hannah Arendt and Simone de Beauvoir   3 ch [W]

This course examines Hannah Arendt's Eichmann in Jerusalem: A Report on the Banality of Evil and Simone de Beauvoir's The Ethics of Ambiguity. Through a close reading of these texts, the class will look at how both Arendt and de Beauvoir explore the politics of hate. Coming to their investigations via the European experience of mechanized mass murder and the routine events of terror and evil during World War II, these philosophers attempt to speak not only to their own generation but to ours as well. *Prerequisite:* Open to students 2nd year and above.

PHIL3317   Jean-Paul Sartre's Philosophy of Freedom   3 ch [W]

The popular view of the "existentialist" owes much to Jean-Paul Sartre-the most well known philosopher of post WW II Europe. Having studied with Edmund Husserl, who exposed him to the method of "pure phenomenology," Sartre would apply this method in his descriptions of human freedom as "dread," "bad-faith," "the look," and "desire," to mention just a few of the themes found in his philosophical texts, plays, and novels. The course will concentrate primarily on his Being and Nothingness, to explore how Sartre recognizes the intentional structure of human consciousness in relation to ourselves, our bodies, human relationships, atheism, and the world. Open to 2nd year students and above.

PHIL3331   Michel Foucault's Discipline and Punish: 3 ch [W]
The Birth of the Prison (O)

This course concentrates on two central themes: the first is Foucault's perception of the "genealogy" of the social sciences in relation to the practices of incarceration and punishment in mid-eighteenth century Europe. The second follows his perception of contemporary interpretations of self-identity as they have been generated by: the continued growth of penal institutions, the social sciences as disciplines of "subjectivity", the distinction between torture and punishment, and subjective vs. objective surveillance. Open to 2nd year students and above.

PHIL 3332   Philosophers and the Nazis (A)   3 ch [W]

This course examines philosophical responses to tyranny during the Nazi period, considering anti-Nazi thinkers (such as Hannah Arendt, Winthrop Bell, Dietrich Bonhoeffer, Albert Camus, Dietrich von Hildebrand, Gustav Hübener, Edmund Husserl, Aurel Kolnai, Bertrand Russell, Jean-Paul Sartre, Edith Stein, the White Rose) and pro-Nazi philosophers (Martin Heidegger, Carl Schmitt). We will also consider classical political philosophical critiques of tyranny, and ask whether it is legitimate to blame 19th century German philosophy and other modern philosophical tendencies for inspiring Nazism.

PHIL 3401   Introduction to the Philosophy of Kant   3 ch (3S) [W]

Immanuel Kant's philosophy is influenced by David Hume and the Scientific Method. This course will examine these influences on his philosophy by reading one Kant's major texts. In the light of this reading his answer to questions such as "Can we ever know first principles?", "How can we know the world?"; How can we understand such concepts such Time and Space?"; "Does God exist?" and "How can we be moral beings?" will be explored. Open to students who have taken at least 6 credit hours on Philosophy or with permission of the Instructor.

PHIL 3402   Introduction to the Philosophy of Hegel (O)   3 ch [W]

The course is concerned with the structure of the Self in relation to Hegel's Dialectic. Through a reading of one of Hegel's major texts, students will come to understand his argument, his method and in particular his method of dialectic. The course will clarify why Hegel could have such a profound influence on philosophers as diverse as, for example, Marx, Freud, Weber, Kierkegaard, Lukacs, and Sarte. *Prerequisite:* 6 ch in Philosophy or permission of the instructor.

PHIL3404   Aquinas and Dante (O)   3 ch (3C) [W]

Thomas Aquinas (1225-1274) wrote widely in the fields of metaphysics and ethics as well as in theology. Furthermore, Aquinas was a well-read philosopher who had an extensive knowledge of the Bible, the writings of the early Church Fathers, and other philosophers and theologians including thinkers from Ancient Greece, Judaism, and Islam. Aquinas' writing are reflected in the poetry of Dante Alighieri (1265-1321), especially in the structure and events of his Divine Comedy. In this course, we will examine Dante's poetry as an introduction to the thought of Aquinas and as a way of understanding some of his philosophical ideas. Open to 2nd year students and above.

PHIL3421   Philosophy of Mind   3 ch [W]

What is a human being? Are human beings simply material objects? Are they a combination of matter and soul? What is consciousness and how can it be explained? In this class students will be introduced to these

questions and will explore various answers to these questions from the history of philosophy and from contemporary discussions. Students will engage the answers provided in class as a means of formulating their own understanding of the connection between mind and brain and mind and body. Open to 2nd year students and above.

PHIL3422   Philosophy of Science   3 ch [W]

Kuhn's Structure of Scientific Revolutions, challenged traditional conceptions of science and scientific progress and precipitated much of contemporary discussions in philosophy of science. Focusing on the history of science, Kuhn argued that logical reconstructions of science were inadequate. His argument encouraged philosophers of science to construct relativistic accounts of science and scientific progress. Beginning with the Logical Positivists, this course will trace different accounts of science, with special attention to the debate between realist and anti-realist conceptions of science. Open to 2nd year students and above.

PHIL3431   Philosophy of Religion   3 ch (3C)

Explores some of the traditional issues associated with belief in God, including: the arguments for God's existence, the problem of evil, the meaningfulness of religious language, and how the divine attributes are to be understood. *Prerequisite:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3432   Evil: From Job to Leonard Cohen (O)   3 ch [W]

The subject of evil is both philosophically perplexing and experientially significant. This course examines the subject of evil from a variety of perspectives and sources, including literature and music.

PHIL3433   Models of Divine Agency (O)   3 ch [W]

Various models of how God might be conceived to act in the physical universe are explored and evaluated. These include Nancey Murphy's quantum indeterminacy model, John Polkinghorne's chaos theory model, and Arthur Peacocke's top down causality model. *Prerequisite:* A previous course in philosophy or permission of the instructor.

PHIL 3434   Concept of Miracle (A)   3 ch [W]

This course examines the philosophical issues associated with the concept of miracle. Questions of whether miracles need to be defined as violating the laws of nature, how the laws of nature should be conceived, and the possibility of testimonial evidence ever being sufficiently strong to justify belief in a miracle are examined through the reading of classic and contemporary texts. *Prerequisites:* A course in Philosophy or permission of the instructor. Open to 2nd year students and above.

PHIL3435   Science vs God?   3 ch [W]

This course examines the relationship between science and religious belief. Questions of whether design is a legitimate scientific concept, whether methodological naturalism is a prerequisite of scientific inquiry, and whether 'God of the gaps' arguments are ever legitimate will be examined, as will be various models of how God is conceived as working within nature. *Prerequisite:* Permission of the instructor.

PHIL3501   Contemporary Metaphysics   3 ch (3C) [W] [A]

This course is a seminar in contemporary analytic metaphysics. Topics to be discussed may include personal identity, identity over time, causation, free will, and ontology. *Prerequisites:* PHIL 1101, PHIL 1301, and PHIL 1302 or permission of instructor.

PHIL3601   Liberalism and Its Critics (O)   3 ch [W]

This course provides a contemporary treatment of key themes in liberal political theory, especially the work of John Rawls. We will pay special attention to his conception of freedom (both its worth and extent) and equality, as well as their compatibility and role in justice. The second half of the course considers some important communitarian critics of liberal political theory, including Alisdair MacIntyre, Michael Sandel and Charles Taylor. Open to 2nd year students and above.

PHIL4601-9   Individual Studies in Philosophy (O)   3 ch (3T) [W]

Courses of independent study of specified texts or topics in Philosophy under the supervision of a member of the Department. These courses will normally be given only between May and August inclusive and with the agreement of the supervisor. They require the approval of the Chair of the Department and the Dean of the student's Faculty, and are subject to the regulations for individual Studies published in the Intersession/Summer Session Calendar. *Prerequisite:* 30 ch, including at least 6 in Philosophy.

PHYSICS

Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until

a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a D grade that is a normal part of the final year of that program, and is being taken for the first time in the final year. **NOTE:** See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

Not all courses are offered every year. Consult with the Department concerning availability of courses from year to year.

PHYS 1051, PHYS 1052, PHYS 1091, PHYS 1092 are prerequisites for second year physics courses. PHYS 1061 or PHYS 1071 may count in place of PHYS 1051 and PHYS 1062 or PHYS 1072 in place of PHYS 1052. **NOTE:** That credit can only be obtained for one of PHYS 1051 and PHYS 1091, PHYS 1061 and PHYS 1091, PHYS 1071 and PHYS 1091 or PHYS 1081. However, for students wishing to transfer from engineering PHYS 1081 and EE 1813 may replace First Year Physics i.e. PHYS 1051, PHYS 1052, PHYS 1091, PHYS 1092 (or equivalently PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or PHYS 1071, PHYS 1072, PHYS 1091, PHYS 092).

Courses with a 5 for the first digit are advanced courses, which may be taken only with the permission of the instructor.

PHYS1051   Introductory Physics I   3 ch (3C 1T)

An introduction to the branch of physics called mechanics. Mechanics is the study both of how objects move and why they move the way they do. Describing the motion of objects requires understanding the basic kinematic quantities position, displacement, velocity and acceleration, as well as the connection between them. Understanding the causes of motion can be achieved by considering the forces acting on the object and/or by focusing on the conserved properties of the system (momentum, energy, angular momentum). *Co-requisites*: MATH 1003 or MATH 1053. **NOTES**: Credit can be obtained in only one of PHYS 1051 or PHYS 1081.

PHYS1052   Introductory Physics II   3 ch (3C 1T)

Introduces wave phenomena and electricity and magnetism. Throughout, the concepts related to motion learned in Introductory Physics I are used to describe and explain new phenomena. The study of waves introduces the student to propagating, periodic disturbances. In addition to their importance in mechanical phenomena (e.g. seismic waves), waves form the basis of both optics and acoustics. The study of electricity and magnetism introduces the student to the concept of charge and to the effects of charges on their surroundings (fields and forces). *Prerequisites:* PHYS 1051, PHYS 1061, PHYS 1071, or PHYS 1081, MATH 1003 or MATH 1053. It is recommended that students intending to take Physics courses beyond Introductory Physics should take MATH 1013 or MATH 1063 as a co-requisite to this course. NOTES: Credit can be obtained in only one of PHYS 1052, PHYS 1062, or PHYS 1072.

PHYS1081   Foundations of Physics for Engineers   5 ch (3C 3L)

An introduction to the fundamentals of mechanics. Vector analysis and its application to the analysis of the motion of particles and rigid bodies. Newton's three laws of motion. The kinematics and dynamics of particle motion along straight and curved paths. Work, energy, impulse and momentum of particles and rigid bodies. An introduction to the rotation of a rigid body about a fixed axis, moments of inertia, angular momentum. Simple Harmonic Motion. *Co-requisites*: (MATH 1003 or MATH 1053), (MATH 1503, or MATH 2213, or equivalent). **NOTES**: Credit can be obtained in only one of PHYS 1061 and PHYS 1091, PHYS 1071 and PHYS 1091 or PHYS 1081.

PHYS1091   Experiments in Introductory Physics – I   2 ch (3L)

This course provides the student hands-on experience with concepts covered in PHYS 1061 or PHYS 1071. *Co-requisite*: PHYS 1061 or PHYS 1071.

PHYS1092   Experiments in Introductory Physics – II   2 ch (3L)

This course provides the student hands-on experience with concepts covered in PHYS 1062 or PHYS 1072. *Prerequisite:* PHYS 1091 or PHYS 1081. *Co-requisite*: PHYS 1062 or PHYS 1072.

PHYS1803   Physics and Society (O)   3 ch (3C) [W]

This course aims to investigate the two way interaction between society and physics. The ideas of physics have percolated into the collective consciousness both as scientific knowledge and as cultural reference points and various new technologies can be identified as originating in physics research. However, physics also has to deal with how it is perceived as a discipline and how physicists are perceived as trustworthy authorities. Open to students in all faculties. No mathematics beyond basic high school algebra and geometry is needed. *Content*. Introduction to the philosophy of science and the scientific method, introduction to the major scientific ideas that have shaped our society and the world.

PHYS2311   Mechanics I   3 ch (3C)

Role within programme and connections to other courses. This course is an important - and big! - first step away from the tremendously simplified

problems that we have dealt with both in introductory university physics and in high school. We introduce the integration of greater mathematical sophistication in the treatment of physical situations, showing that comfort with a variety of mathematical techniques will allow us to study a greater range of - and more interesting - problems. Furthermore, this course serves to show that familiarity with the powerful Newtonian tool chest, which we have been using since high school, allows us to approach complicated, realistic situations with confidence. The inclusion of special relativity challenges us to think beyond the familiar. *Content*. Special relativity (including elements related to the development of the theory), advanced Newtonian kinematics and dynamics (translational and rotational), conservation principles. *Prerequisites:* MATH 1003 or MATH 1053 and MATH 1013 or MATH 1063 plus PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent. *Co-requisite*: MATH 2003 or equivalent.

PHYS2312   Mechanics II   3 ch (3C)

Role within programme and connections to other courses. This course introduces an entirely new approach to mechanics, one that is more elegant and more powerful but less intuitive than the Newtonian approach to which we have been exposed thus far. This is the last compulsory mechanics course and, therefore, includes the classical mechanics background for the quantum mechanics stream. Some computational exercises are included (e.g. the use of numerical differential equation solvers). *Content*. Mechanics in non-intertial reference frames, calculus of variations, Lagrangian mechanics, two-body, central force problems (orbital motion), rotational motion of rigid bodies, an introduction to Hamiltonian mechanics. *Prerequisites:* PHYS 2311, MATH 2003 or equivalent. *Co-requisite*: MATH 2013 or equivalent.

PHYS2327   Circuits & Elementary Electronics   5 ch (4C/L)

Role within programme and connections to other courses. Understanding circuits and basic electronics is essential for any physicist who will develop or simply use measuring devices. This course moves beyond the simple DC circuits involving resistors and capacitors seen in introductory physics. It introduces the basic elements of the many electronic devices which we use every day, then shows how to combine these elements when designing simple circuits. This topic is particularly well-suited to hands-on learning. The course is experiential in design with more time devoted to manipulations than to lecture. Through the experimental work involved in learning about basic electronics, we are introduced to and become comfortable with essential measurement apparati (multimeters, oscilloscopes, etc.). The understanding of basic electronics and measuring devices gained from this course will serve to enhance all future laboratory work: the equipment will not distract us from the physical phenomena which we are studying and we will understand how to best use the equipment and appreciate its limitations. This course also introduces some computational techniques for circuit analysis e.g. in the solution of simultaneous linear equations. *Content*. AC circuits, operational amplifiers, diodes and other pertinent topics. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent, PHYS 2331. *Co-requisite*: MATH 2013 or equivalent.

PHYS2331   Research Skills   3 ch (3C) [W]

Role within programme and connections to other courses. This course helps us to acquire skills needed to do research. These include two different aspects: (1) how to deal with experimental limitations (2) how to read and write scientific documents. The skills acquired in this course are subsequently applied in other courses. In all future experimental work, we will treat experimental limitations properly and fully. In all future courses involving reports, written work will meet or exceed the standards established in the Research Skills course. The title of this course emphasises the fact that the programme does more than fill us with physics facts. This is also an opportunity to review other skills, which are developed by the programme (problem solving strategies, approximation, presentation skills, index/abstract searching, etc.). All of these skills are generally applicable in physics & beyond. *Content*. Uncertainty analysis, Data processing and analysis, Reading and understanding technical literature, Technical writing. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent, MATH 1003, MATH 1013 or equivalent. *Co-requisite*: MATH 2003 or equivalent.

PHYS2341   Thermal Physics   3 ch (3C)

This course includes some experimental work that supports the lecture material. Role within programme and connections to other courses. This course furnishes us with classical thermodynamics and a little about properties of materials. We have heard that "energy is conserved" and even have an appreciation of how important this principle is, but in first year mechanics energy is often apparently "lost" when friction does work. Here, at last, we introduce a complete formulation for energy conservation, comparing the work defined in first year with heat as a means of energy transfer. We discuss transformations of energy in a variety of processes, then go on to explain that not all of the energy is available for doing mechanical work. The theoretical framework of

classical thermodynamics is beautifully self-contained, but this course also emphasises the link between the microscopic world of the kinetic theory (drawing on Newtonian mechanics as it does so) and the macroscopic world of the everyday, in preparation for the statistical thermodynamics to follow. *Content*. Gases (ideal and real) and pressure, phases and phase diagrams, the state of a system, what is energy?, heat and work, first, second and third laws of thermodynamics, entropy, enthalpy and free energies, heat engines, refrigerators, heat pumps and efficiency, phase transitions, introductory kinetic theory. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent, MATH 1003, MATH 1013 or equivalent. *Co-requisite*: MATH 2003 or equivalent.

PHYS2351   **Quantum Physics**   **3 ch (3C)**

This course includes some experimental work that supports the lecture material. Role within programme and connections to other courses. This course lays the necessary foundations for thinking about phenomena on very small spatial scales. This course calls on many concepts learned in introductory physics: position, momentum, energy, angular momentum, vibrations, waves. It casts many of them in a new light, at times requiring modification of the classical definition of these quantities. Quantum Physics serves as the foundation for the more in-depth learning of the tools of quantum mechanics presented in the Quantum Mechanics trio of courses and the courses which follow from these. In addition, Quantum Physics is essential background for the study of astrophysics and atmospheric physics. *Content*. Particle properties of waves: blackbody radiation, photoelectric effect, Compton effect; wave properties of particles: de Broglie waves, Davisson-Germer experiment, the uncertainty principle; old atomic theory: atomic spectra, Rutherford's model, Bohr's model, spontaneous and stimulated transitions, lasers; quantum mechanics: the Schrodinger equation, mathematical tools; quantum mechanical examples: square wells and barriers, quantum tunnelling and its applications; quantum theory of atoms. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent, MATH 1003, MATH 1013 or equivalent. *Co-requisite*: MATH 2003 or equivalent.

PHYS2372   **Waves**   **3 ch (3C)**

This course includes some experimental work that supports the lecture material. Role within programme and connections to other courses. Oscillations and waves are key elements to understanding many subfields and applications of physics. Acoustics, optics and electromagnetism (telecommunications) are obvious examples, but waves are also essential to understanding quantum mechanics (the Schrödinger formalism), some atmospheric phenomena, seismic phenomena and fluid mechanics. *Content*. Oscillatory motion, waves applications to optics and acoustics. *Prerequisites:* PHYS 2311, MATH 2003 or equivalent. *Co-requisite*: MATH 2013 or equivalent.

PHYS2603   **Work Term Report I**   **CR**

A written report on the scientific activities of the work term. A component of the grade will be the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for PHYS COOP placement.)

PHYS2703   **Physics Outreach & Education (O)**   **3 ch (3C) [W]**

Role within programme and connections to other courses. This course is meant to help us develop the skills needed to communicate with non-specialists concerning physics. Given that most physics research is ultimately paid for by the public, it behooves physicists to communicate effectively with those who are funding their work, for the benefit of both parties. The goal of such communication is two-fold: (1) to ensure that the general public is physics literate and therefore able to enter into a discourse about the science, and (2) to ensure that the next generation of university students is exposed to physics in such a way that they can make an informed choice about whether or not their academic and career paths should include physics. *Content*. Topics may include: science journalism, science museums and exhibits, outreach to schools and other groups, physics education and physics education research. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent and one year of university physics.

PHYS2902   **Environmental Physics (O)**   **3 ch (3C)**

Role within programme and connections to other courses. With the population of the planet increasing and the natural resources decreasing, it is more important than ever to understand the manner in which those resources can and are being used as well as the environmental impacts of those uses. In addition, part of understanding those impacts is understanding how measurements of impacts are made. By focussing on applications of physics to environmental matters, this course contributes to the synthesis of concepts and models learned in other courses. *Content*. The main focus of the course is on matters related to energy, its production, extraction, distribution and use. Topics include hydroelectricity, solar power, nuclear power, fossil fuels, etc. *Prerequisites:* PHYS 1061, PHYS 1071 or PHYS 1081.

PHYS3322   **Electromagnetism I**   **3 ch (3C)**

Role within programme and connections to other courses. This course will be our first major foray into the formalism of electromagnetic theory. A thorough examination of the nature of vector fields and the forces they cause, and scalar fields along with their relationship to energy, will form a connection to earlier discussions started in Mechanics I. The tools studied previously in Intermediate Calculus (vector operations and calculus) and Methods of Theoretical Physics (particularly special functions like Legendre polynomials and spherical harmonics, delta functions, and tensor analysis) will play a significant role here. *Content*. Interactions between point charges, the nature and calculation of the electric and magnetic fields, the distribution of electric and magnetic fields in space (flux, Gauss' law, Ampère's law), reactions of charges and dipoles to applied fields, electrostatic scalar potential and magnetic vector potential, elementary gauge theory, energy storage in static electric and magnetic fields, elementary treatment of fields in materials, fields across boundaries, time dependence of electromagnetic fields, displacement current, the final form of Maxwell's equations, electromagnetic waves. *Prerequisites:* PHYS 2311, PHYS 3331, MATH 2013 or equivalent.

PHYS3331   **Methods of Theoretical Physics**   **3 ch (3C)**

Role within programme and connections to other courses. In the course of an undergraduate physics programme we employ a variety of theoretical techniques. This course exposes us to theoretical ideas that are widely applicable in electromagnetism, quantum mechanics, classical mechanics and relativity. Special emphasis will be placed on demonstrating the general nature of the topics considered. *Content*. Non-orthogonal, non-normalised bases, tensors, special functions (general solutions to second order differential equations) and expansions in special functions, integral transforms (Fourier, z-transform, Laplace transform). *Prerequisites:* MATH 2213 or equivalent, approved second year physics.

PHYS3336   **Experimental Physics I**   **3 ch (3L)**

Role within programme and connections to other courses. Various courses contain experiments that are directly related to the material addressed in the lectures, however, in the interest of promoting an understanding of connectivities (avoiding compartmentalisation) and refining research skills, this synthesis course will contain a variety of experiments, many of which integrate concepts learned in diverse courses. *Content*. The experiments include topics in mechanics, electromagnetism, quantum physics, thermal physics and optics. *Prerequisite:* PHYS 2331, PHYS 2327 or permission of the instructor.

PHYS3338   **Independent Study**   **3 ch (3R)**

Role within programme and connections to other courses. Every physics honours student is required to complete one independent study course, to allow the development of critical reading and thinking skills. This course shall be taken no sooner than the beginning of his/her third year and no later than the penultimate term of his/her degree (i.e. the student must know a sufficient amount of physics to allow for a challenging independent study course, and the student should complete this course before working on his/her Advanced Research Project so that the skills developed during the independent study course are of use during the thesis project). *Content*. The student will choose among the list of topics for which supervision has been offered or can choose some other topic of interest if (s) he can convince a faculty member to supervise the course. *Prerequisite:* approved 2000-level or 3000-level courses.

PHYS3342   **Statistical Physics**   **3 ch (3C)**

Role within programme and connections to other courses. This course builds from the bottom up (molecules → continuous phases) what Thermal Physics describes from the top down (macroscopic properties → kinetic theory). We reinforce the idea (from Quantum Physics and Quantum Mechanics I) that our macroscopic observations can be based on underlying probabilities, rather than strict determinism. *Content*. The ensemble basis for basic statistics, equilibrium between interacting systems, the Laws of Thermodynamics (from a microscopic standpoint), classical and quantum statistical distributions, applications of Maxwell-Boltzmann statistics, kinetic theory of gases revisited, applications of quantum statistics. *Prerequisite:* PHYS 2341.

PHYS3351   **Quantum Mechanics I**   **3 ch (3C)**

Role within programme and connections to other courses. The need for and qualities of quantum mechanics have been clearly established in Quantum Physics. This course begins to put quantum mechanics on a formal footing. The approach in QM I is expected to include both wave and matrix techniques. *Content*. Mathematical structure of quantum mechanics, Hilbert space, operator algebra; postulates of quantum mechanics, symmetries and conservations; quantum dynamics; general theory of angular momentum, coupling of angular momenta, irreducible tensor operators, Wigner-Eckart theorem; analytical solution of the hydrogen atom; identical particles: spin and statistics, the Pauli exclusion principle and many electron atoms. *Prerequisites:* PHYS 2351, PHYS 2312, approved second year mathematics. *Co-requisites*: PHYS 3331.

PHYS3603   **Work Term Report II**   **CR**

A written report on the scientific activities of the work term. A component of the grade will be the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for PHYS COOP placement.) *Prerequisite:* Work Term Report I in a field of science.

PHYS3752   **Atomic and Molecular Physics (O)**   **3 ch (3C)**

Role within programme and connections to other courses. For an undergraduate student, atomic and molecular physics is one of the most fundamental applications of quantum mechanics in the curriculum. The course provides a firm grounding in quantum angular momentum theory, including spin and angular momentum coupling, and makes extensive use of the matrix approach to quantum physics calculations. The course is linked to all courses in the quantum mechanics stream, and to optics. *Content.* Quantum angular momentum concepts, including orbital angular momentum, spin, and angular momentum coupling, the hydrogen atom, including spin-orbit and hyperfine interactions, methods and approaches to multi-electron atoms, topics in molecular physics, including development of the Hamiltonian, the Born-Oppenheimer approximation, and the structure of molecular spectra. Usually offered on rotation with Subatomic Physics and Solid State Physics. *Prerequisites:* PHYS 3322, PHYS 3351.

PHYS3783   **Topics in Astrophysics (O)**   **3 ch (3C)**

Role within programme and connections to other courses. Armed with the basic understanding acquired from the Astronomy survey course, we dive more deeply into a few topics. Astrophysics is a wonderful example of how elements from several subfields of physics are brought together to understand a phenomenon. Mechanics, quantum physics, and statistical physics are all involved. We will pull together knowledge acquired in introductory physics (conservation principles, forces, optics) and in the Astronomy course (blackbody radiation and spectral lines, in addition to astronomy basics), and will introduce other elements as required. Credit cannot be obtained for both ASTR 1023 and ASTR 1033. *Content.* The specific topics studied will vary from offering to offereing, but in all cases, the goal will be to apply physics knowledge to understand celestial phenomena. In addition, an element of familiarisation with current astrophysical research will be included. *Prerequisites:* ASTR 1033 and PHYS 1051 + PHYS 1052 or equivalent, or permission of the instructor.

PHYS3852   **Subatomic Physics (O)**   **3 ch (3C)**

Role within programme and connections to other courses. The study of nuclear and particle physics draws mainly on quantum physics but, due to the semi-empirical nature of many of the nuclear models used, it also draws heavily on basic electromagnetism and other branches of physics. An understanding of nuclear physics is essential for work related to radiation therapy, in the nuclear energy sector, and in some branches of astrophysics. As for particle physics, as well as being a field in its own right, it has become inextricably linked to research in cosmology. *Content.* Some overlap of topics with environmental physics and medical physics is to be expected, but the approach and depth will differ greatly. Exact content will be at the instructor's discretion allowing the course to focus sometimes more on applications of nuclear physics, sometimes more on particle physics, etc. Usually offered on rotation with Atomic & Molecular Physics and Solid State Physics. *Prerequisite:* PHYS 3351.

PHYS3883   **Atmospheric Physics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. Atmospheric events and processes have an impact on and are impacted by human activity, making atmospheric physics a topic of great societal relevance. The study of the atmosphere requires consideration of a wide range of spatial scales – from radiation transfer at the atomic level to phenomena on the global level – and a wide range of time scales – from seconds to centuries. Making headway requires an understanding of what processes can and cannot be ignored depending on the scales under consideration. In addition to providing an introduction to the field of atmospheric physics, this course contributes toward the overall goal of the physics programme by calling on us to combine knowledge from a variety of subfields of physics. Knowledge acquired in thermal physics, in mechanics and in quantum physics (blackbody radiation, spectral lines) must be brought together to develop an understanding of basic atmospheric physics. *Content.* Structure of the atmosphere, the global energy balance, atmospheric thermodynamics, physics of weather patterns, observational techniques and instrumentation. Usually alternates with Astrophysics. *Prerequisites:* PHYS 2312, PHYS 2341, PHYS 2351.

PHYS3892   **Medical Physics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. This course introduces our students to a field where there are many opportunities for stimulating and satisfying careers. Medical physics is an application of physics to the particular – and particularly complex – system which is the human body. This course requires an integration of concepts from optics, quantum physics, nuclear physics, electromagnetism, mathematics, etc.

Content. Radiation therapy, medical imaging. Usually alternates with Biophysics. *Prerequisite:* PHYS 2351.

PHYS3911   **Mechanics III (O)**   **3 ch (3C)**

Role within programme and connections to other courses. This third, elective mechanics course can afford to take a more philosophical approach to Hamiltonian mechanics, while Mechanics II will, of necessity, be more pragmatic. In addition, our tools can now be used in a variety of very sophisticated circumstances. *Content.* Topics might include Hamiltonian mechanics with greater reach, canonical transformations, Hamilton-Jacobi theory, action-angle variables, collision theory, non-linear mechanics and chaos, continuum mechanics (Lagrangian and Hamiltonian formulations, in contrast to the Continuum and Fluid Mechanics course). *Prerequisite:* PHYS 2312.

PHYS3912   **Special Relativity (A)**   **3 ch (3L)**

Role within programme and connections to other courses. The Special Theory of Relativity is one of the foundations of modern physics. It underlies our understanding of particle physics and gravitation. This course builds beyond the introduction begun in the Physics course Mechanics I. It is recommended for all physics and mathematics students who wish to pursue the study of particles, fields and gravitation. *Content.* The course provides an introduction to the physical principles (Lorentz invariance, constancy of the speed of light, equivalence, of mass and energy) and the mathematical underpinnings (Minkowski spacetime, tensors), of the theory of special relativity. This course is cross listed MATH 3463. Credit cannot be obtained for both MATH 3463 and PHYS 3912. *Prerequisites:* MATH 2003, PHYS 1062 or equivalent, or permission of the instructor. *Corequisites:* MATH 2013, PHYS 2311.

PHYS3952   **Solid State Physics (O)**   **3 ch (3C)**

Role within programme and connections to other courses. Solid state physics, also referred to as condensed matter physics, is the study of matter in which a large number of atoms (1023 cm-3) are bound together, forming a dense solid aggregate. It is a fundamental field of physics that leads to such areas and topics as material science, nanotechnology, and superconductivity. In this course, the student will study the structure of solids and how this structure affects such things as their mechanical properties, their thermal properties, and their electronic properties. This course builds on concepts introduced in thermodynamics and statistical physics, as well as quantum mechanics, with links to electromagnetism (e.g. van der Waals forces). *Content.* Lattice structure and dynamics, electron kinetics and dynamics, applications (e.g. semiconductors, superconductors, magnetic resonance). Usually offered on rotation with Atomic & Molecular Physics and Subatomic Physics. *Prerequisites:* PHYS 3351, PHYS 3342.

PHYS3993   **Biophysics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. The study of biophysics offers a new perspective on physics through application to the biological sciences. It involves the integration of diverse concepts seen in introductory physics as well as elements of thermodynamics and fluid physics. It highlights the usefulness of physical thinking and a physicist's perspective in the study of biological phenomena. *Content.* Biomechanics, the optics of vision, sound, hearing & echolocation, fluids in motion, the thermodynamics of life, physics at the cellular level, electricity and magnetism in biological systems. Usually alternates with Medical Physics. *Prerequisites:* PHYS 1061, PHYS 1062, PHYS 1091, PHYS 1092 or equivalent plus MATH 1003 or MATH 1053, MATH 1013 or MATH 1063, BIOL 1001.

PHYS4321   **Electromagnetism II**   **3 ch (3C)**

Role within programme and connections to other courses. This second course on the formalism of electricity and magnetism extends the material from Electromagnetism I, and adds mathematical rigor and sophistication to our toolbox of techniques for electromagnetic problems. Heavier use of the ideas from Methods of Theoretical Physics is made, including Fourier methods and spherical harmonics. At the culmination of this course, we will have been exposed to all of the core ideas in E/M theory except for relativity. The latter and applications will follow in Electromagnetism III. *Content.* Fields in materials (D and H), polarization and magnetization vectors, polarizability and susceptibility tensors, types of magnetization, gauge theory, and its uses in solution of electromagnetic problems, conservation laws in electromagnetic theory, Poynting's theorem, the Maxwell stress-energy tensor, the Lagrangian for a charged particle in an electromagnetic field, radiation from accelerated charges, retardation effects, generation and propagation of E/M waves, the breakdown of classical electromagnetic theory. *Prerequisites:* PHYS 2311, PHYS 3322, PHYS 3331.

PHYS4332   **Computational Physics**   **3 ch (3C)**

Role within programme and connections to other courses. This is a capstone course to demonstrate the use of numerical and simulation techniques in a range of situations taken from across the programme. For

instance, numerical solutions to differential equations might be used to look at some examples of chaotic behaviour or Monte-Carlo simulations might be used to look at percolative mass transport problems. Computational techniques have great importance in the modern physical sciences to the extent that some have described it as of equal importance to experimental and theoretical physics (although computational physics may also be considered to have elements of both theoretical and experimental physics, of course). The skills acquired in this course can subsequently be applied in other advanced courses, in particular the Advanced Research Project. *Content*. Numerical techniques, modelling techniques. *Prerequisites:* Approved second year mathematics and third year physics, CS 3113 or equivalent.

PHYS4338   **Advanced Research Project**   **8 ch [W]**

All physics honours students are required to complete a research project, under the supervision of a member of the department. Honours students in an interdepartmental program with physics may choose to complete their honours project in physics. Non-honours students may complete a research project as an elective. The Advanced Research Project course includes a formal written report and an oral defense, both of which are assessed by committee. *Prerequisites:* PHYS 3336, PHYS 3338, permission of the department.

PHYS4351   **Quantum Mechanics II**   **3 ch (3C)**

Role within programme and connections to other courses. The second QM course is not required for the majors programme, but furnishes our honours students with a range of tools allowing them to move beyond hydrogen-like atoms and to explore the applications of quantum mechanics. *Contents*. Time independent perturbation theory, non-degenerate and degenerate cases, the Stark effect, fine structure, the Zeeman effect; the variational method, helium atom; the WKB method; time-dependent perturbation theory, Fermi's golden rule, harmonic perturbation, the adiabatic approximation, the Berry phase; a charged particle in EM field, gauge transformation, Landau levels, the Aharonov-Bohm effect; scattering theory: the Lippmann-Schwinger equation, optical theorem, partial wave expansion, phase shifts, effective range expansion, resonances, scattering between identical particles, Coulomb scattering. *Prerequisite:* PHYS 3351.

PHYS4371   **Optics**   **3 ch (3C)**

This course includes some experiments that support the lecture material. Role within programme and connections to other courses. Optics is both a field of research in its own right and a topic the tools of which are used by many other branches of physics. This course builds on the basic concepts of wave optics introduced in Waves. It also provides a brief introduction to some concepts of photonics, the quantum treatment of light. *Contents*. Advanced geometrical optics (e.g. the transition between geometrical and physical optics, the thick lens, Jones' matrices), Fourier optics. *Prerequisite:* PHYS 2372, PHYS 3322.

PHYS4603   **Work Term Report III**   **CR**

A written report on the scientific activities of the work term. A component of the grade will be the employer's evaluation of the student. (Students must have a GPA of 2.7 or better for PHYS COOP placement.) *Prerequisite:* Work Term Report II in a field of science.

PHYS4722   **Signal & Image Processing (A)**   **3 ch (3C)**

Role within programme and connections to other courses. Many physics career paths involve signal and image processing of some kind, e.g. seismic data processing, medical imaging, remote sensing (defense, forestry, mining), observational astrophysics, etc. As a result, understanding the possibilities and limitations of various data analysis techniques is a valuable asset for any physics graduate. *Content*. This course uses data from a variety of applications to illustrate the wide range of applicability of the tools discussed. Usually alternates with Advanced Electronics. *Prerequisite:* PHYS 3331.

PHYS4823   **Advanced Electronics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. The world of experimental physics is an electrifying blend of theory and hands-on measurements which relies heavily on a wide array of complex electronic devices. This course builds on Circuits & Elementary Electronics and introduces electronics and instrumentation we encounter through a physics career. The requirement to design and build electronic equipment, to integrate and control multiple components, and to efficiently operate complex instrumentation is fundamental to experimental physics. The goal of this course is to furnish the tools we need to meet these challenges. It includes topics in electronic design, interfacing and control, sensors and detectors, and data acquisition. *Content*. Multi-component design, amplifiers, filters, PCB design, integrated circuits, digital logic and programmable devices, radio frequency design, interfacing and control, transducers, detectors and receivers, solid state sensors. Usually alternates with Signal & Image Processing. *Prerequisite:* PHYS 2327.

PHYS4838   **Research Project**   **4 ch [W]**

A one-term research project, supervised by a member of the department, assessed on the basis of the research work carried out and a report. **NOTE** that no defense is involved (in contrast to the Advanced Research Project). *Prerequisite:* PHYS 3336.

PHYS4872   **Plasma Physics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. Plasmas are sometimes referred to as the fourth state of matter. In a plasma, charge separation between electrons and ions gives rise to electric fields, and the movements of these charged particles result in currents and magnetic fields. Understanding the behaviour of plasmas involves mechanics, electromagnetism, and thermodynamics, and thus a plasma physics course contributes toward the overall goal of the physics programme by calling on us to combine knowledge from a variety of subfields of physics. Plasmas are found in many branches of physics (e.g. particle physics, condensed matter, astrophysics) and so the knowledge gained in this course will be of great value in many fields. *Content*. Single particle motion, trajectories and drift, plasmas as fluids (electron fluid and ion fluid, single fluid magnetohydrodynamics), waves in a fluid plasma. Usually alternates with Continuum & Fluid Mechanics. *Prerequisites:* PHYS 2341, PHYS 2372, PHYS 4321.

PHYS4922   **Electromagnetism III**   **3 ch (3C)**

Role within programme and connections to other courses. This course pursues high level extension and application of electromagnetic theory. It connects to and extends relativistic mechanics (started in Mechanics I), and illuminates ideas from atomic/molecular physics, plasma physics and other fields. *Content*. Magnetohydrodynamics, relativistic four-vectors and four-tensors, force and Minkowski force, covariant formulation of E/M fields, an E/M perspective on quantum field theory. *Prerequisites:* PHYS 4321, PHYS 3351.

PHYS4933   **Special Topics in Physics**   **3 ch (3C)**

This "course" is included in order to allow for ad hoc courses that might be offered only once. For instance, a visiting professor may have some expertise that s/he could share with the Department, or the student body may request a course about a particular topic that intrigues them. *Prerequisite:* Permission of the department.

PHYS4938   **Experimental Physics II (O)**   **3 ch (3L)**

Role within programme and connections to other courses. Various courses will contain experiments that are directly related to the material addressed in the lectures, however, in the interest of promoting an understanding of connectivities (avoiding compartmentalisation) and refining research skills, this synthesis course will contain a variety of experiments, many of which integrate concepts learned in diverse courses. *Content*. The experiments will cover a wide variety of topics. *Prerequisite:* PHYS 3336

PHYS4953   **Introduction to Quantum Field Theory**   **3 ch (3C)**
          (Cross-Listed: MATH 4443)

Content. Relativistic quantum mechanics. The negative energy problem. Classical field theory, symmetries and Noether's theorem. Free field theory and Fock space quantization. The interacting *Field:* LSZ reduction formula, Wick's theorem, Green's functions, and Feynman diagrams. Introduction to Quantum electrodynamics and renormalization. Credit cannot be obtained for both MATH 4443 and PHYS 4953. *Prerequisites:* MATH 3003, PHYS 3351, MATH 3463/PHYS 3912 and one of MATH 3043, MATH 3503, PHYS 2312, PHYS 3331, or permission of the instructor.

PHYS4972   **Continuum & Fluid Mechanics (A)**   **3 ch (3C)**

Role within programme and connections to other courses. The emphasis of this course will be on how what we know of Newtonian mechanics is carried over into a continuum. This approach helps to emphasise that the tools and knowledge we have already developed can be used to great effect in new situations. In addition to the portability of physical concepts, we will also be able to see some generally useful mathematical tools in a new context (vector calculus in velocity fields being a key example). *Content*. Volume and surface forces, stress and strain, Hooke's Law, equation of motion for an elastic solid, longitudinal and transverse waves in a solid, fluid properties, fluid motion. Usually alternates with Plasma Physics. *Prerequisites:* PHYS 2312, PHYS 3331.

PHYS4983   **Introduction to General Relativity (A)**   **3 ch (3C)**
          (Cross-Listed: MATH 4483)

Role within the programme and connections to other courses. Along with quantum theory, general relativity is one of the central pillars of modern theoretical physics with wide-ranging implications for astrophysics and high energy physics. The essential idea is that gravitation is a manifestation of the curvature of spacetime rather than a force in Newtonian sense. This course will provide students with a basic working understanding of general relativity and an introduction to important

applications such as black holes and cosmology. *Content.* Review and geometric interpretation of special relativity; foundations of general relativity; linearized gravity and classical tests; black holes; cosmology. Credit cannot be obtained for both MATH 4483 and PHYS 4983. *Prerequisites:* MATH 3463/PHYS 3912, MATH 4473 or permission of the instructor.

PHYS5952　　　　Quantum Mechanics III (O)　　　　3 ch (3C)

Role within programme and connections to other courses. This advanced quantum mechanics course introduces relativistic quantum mechanics and a variety of modern applications of quantum mechanics. *Content.* Relativistic quantum mechanics: the Klein-Gordon equation, Lorentz transformation, the Dirac equation, the Dirac solution of the hydrogen atom; quantum theory of radiation: radiation-matter interaction, decays, absorption, stimulated emission, scattering of photons by atoms, the Casimir effect; path integral formulation; quantum entanglement, the EPR paradox, dense coding, quantum teleportation, the Bell inequality. *Prerequisite:* PHYS 4351.

PHYS5993　　　　Magnetic Resonance Imaging (O)　　　　3 ch (3C)

Role within programme and connections to other courses. This advanced course draws upon electromagnetism, quantum mechanics and statistical thermodynamics to provide a capstone topic tied to the department's research interests. *Content.* Principles of Magnetic Resonance Imaging, survey of imaging techniques, modern applications of MRI in medicine, biology and materials science. *Prerequisite:* Permission of the instructor.

POLITICAL SCIENCE

See beginning of Section H for abbreviations, course numbers and coding.

POLS1203　　　Political Issues in Canada and Beyond　　　3 ch (3C) [W]

Political issues and case studies, drawn from Canadian and international contexts, are used to introduce students to central debates and concepts of politics and political analysis.

POLS1303　　　　Pivotal Political Events　　　　3 ch (3C) [W]

Considers the political origins and long-term political impact, as well as issues raised in the field of political science, of events which have shaped the contemporary world, such as the Russian Revolution, the Holocaust, the dropping of the atomic bomb, the Cold War, the rise of the welfare state, and the recent U.S. elections.

POLS1403　　Contemporary Political Ideas and Ideologies　　3 ch (3C) [W]

Introduces students to the important political ideas and movements of the past century that shape present day society. Tracing the development and thinking about political life in the twentieth century, it examines such diverse ideologies as: liberalism, social Darwinism, existentialism, feminism, ecologism, and post-modernism.

POLS1451　　　The American Presidential Election　　　3 ch (3C) [W]
　　　　　　　　in Historical Context (O)

This political history course introduces students to some of the key issues surrounding each U.S. presidential campaign. Offered every four years to correspond with the American Presidential election cycle, it will be normally co-taught with the Department of History. This course cannot be taken by students who have already taken HIST*1451.

POLS1603　　　　Politics of Globalization　　　　3 ch (3C) [W]

Introduces students to the study of globalization: the global political, economic and social relations that simultaneously bind states and people together, and divide them. Topics include the global economy and trade; the political impact of new technologies; global social movements; global inequalities; and the effect of globalization on armed conflict, migration, climate change, and health.

POLS1703　　　　Issues in World Politics　　　　3 ch (3C) [W]

This course investigates the most pressing issues in contemporary world politics with a particular focus on conflict and security challenges which have arisen since the end of the Cold War. Debates over war and terrorism, international law and human rights, and humanitarian intervention are considered, along with new challenges connected to economic development, population growth and environmental pressures.

POLS1803　　　　Politics of Climate Change　　　　3 ch (3C) [W]

This course surveys the politics of climate change in a global context. In the coming years, climate change will drive politics at the international, national, and sub-national levels. Specific topics include climate change itself, international treaties to reduce greenhouse gas emissions, humanitarian crises and climate change refugees, climate change and the media, and climate change denial.

POLS2013　　　Introduction to Political Economy　　　3 ch (3C) [W]

This course surveys the basic themes of Political Economy analysis. Themes include the nature of capitalism, the work experience, class and class struggle, political organizations and parties, business associations and unions, corporations, poverty, inequality, environmental degradation, the role of the state, militarization, and imperialism.

POLS2202　　　　Canadian Politics　　　　3 ch (3C) [W]

An introductory course in Canadian government and politics, dealing with the following topics: the constitution and civil liberties; federalism, with some focus on Quebec; the legislative, executive and judicial branches of government; political parties and interest groups; representation and electoral behaviour; nationalism in Canada. Students cannot hold credit for both POLS 2200 and POLS 2202.

POLS2303　　　Politics of the Developing World　　　3 ch (3C) [W]

This course introduces students to key political issues facing developing countries using a comparative politics approach. Key themes include state formation; sovereignty, democracy and accountability; economic strategy; impact of globalization.

POLS2503　　　　Women and Politics　　　　3 ch (3C) [W]

This course maps the rise of the Second Wave feminist movement in North America, examining women's engagement with politics on issues concerning citizenship, the economy, legal status, the division of public and private, and bodily autonomy.

POLS2603　　　Comparative Politics of the　　　3 ch (3C) [W]
　　　　　　　　Industrialized World

This course introduces students to similarities and differences in the political culture, political institutions and public policies of countries in the industrialized world (Western Europe and North America primarily).

POLS2703　　Introduction to International Relations　　3 ch (3C)

Provides a comprehensive overview of the political science subfield of International Relations (IR): the study of global politics as an international system. The course focuses on core IR concepts and theories, and explores how these are used to analyse how power works in global politics; why states go to war; why states and other actors sometimes cooperate to address global challenges; and why there are global inequalities. Students are strongly encouraged to complete 3 ch of POLS at the 1000-level before enrolling in this course.

POLS3011　　　European Imperialism, 1815-1914　　　3 ch (3C)
　　　　　　　　(Cross-Listed: HIST 3011)

Examines the evolution of European imperialism in Africa and Asia from the end of the Napoleonic Wars to the outbreak of the First World War. Topics to be covered include: causes of the revival of imperialism; the French conquest of Algeria; British expansion in South Africa; the evolution of British rule in India, French rule in Indochina, and Dutch rule in Indonesia; the European powers and informal imperialism in China; the expansion of European control in Africa; theories and practices of colonial rule; the role of explorers and missionaries; race, gender, and class in colonial societies; the promotion of imperialism in popular culture; and resistance to imperialism.

POLS3012　　　European Imperialism, 1914-1975　　　3 ch (3C)
　　　　　　　　(Cross-Listed: HIST 3012)

Examines the evolution of European Imperialism after the outbreak of the First World War, and ends with a detailed examination of post-1945 decolonization. Topics to be covered include: the impact of the First World War on European empires; gender, race, and class relations in colonial societies; cultures of imperialism in the 1920s and 1930s; the evolution of imperial systems of control; the rise of anti-colonial nationalist movements; the impact of the Second World War; counter-insurgency and colonial wars after 1945; the causes and dynamics of decolonization; and the legacies of empire. *Prerequisites:* Prior completion of HIST 3011 an asset but not required.

POLS3103　　　Rights in Conflict in North America　　　3 ch (3C) [W]

Investigates competing visions of rights in contemporary North American politics in historical, ethical and theoretical perspective.

POLS3104　　　　African American Politics (O)　　　　3 ch (3C) [W]

This course surveys African American history and politics from Reconstruction to the present. Specific topics include Reconstruction, Jim Crow, the Civil Rights Movement, the politics of memory, and Black Lives Matter.

POLS3105　　　　American Politics　　　　3 ch (3C) [W]

Surveys the American political experience with a focus on the post-1945 period. Topics include the paranoid tradition in American politics, the New Deal consensus, the Cold War, the Civil Rights movement, the Second

Wave feminist movement, the war against Vietnam, the rise of the New Right and post-9/11 American Foreign policy. Students cannot hold credit for both POLS 2101 and POLS 3105.

POLS3213   Capitalism, Canada and Class   3 ch (3C) [W]

Examines the shifting class structure of Canada from the standpoint of the evolution of global capitalism. Topics covered include the decline of the established worker, the growth of non-standard work, migrant labour, unemployment, the growth of precarious labour, the lingering effects of the 2008 crisis, and the impact of the COVID-19 pandemic.

POLS3215   Issues in Canadian Public Policy   3 ch (3C) [W]

Examines major issues in Canadian public policy making, including the role of political institutions, social movements, and public opinion in shaping federal, provincial, and municipal policies in Canada. Topics include a range of policy fields, including health, economic, environmental, urban, immigration, and social policy.

POLS3217   Canadian Environmental Policy (A)   3 ch (3C) [W]

Examines Canadian environmental politics and policy. Explores the influence of economic and political interests, public opinion, Canada's political-institutional frameworks, and social movements on environmental policy and outcomes. Topics include climate policy, species at risk, air and chemical pollution, water management, land management, and environmental justice.

POLS3237   The Politics of Memory in Canada and   3 ch (3C)
**   the United States (O)**

What is remembered and how it is remembered is necessarily political. This course examines the politics of memory in different national contexts. Topics include the Native in the North American imagination, slavery, war (example, the First World War in Canada, the Vietnam War in the United States), and the tourist gaze.

POLS3241   Canadian Foreign Policy   3 ch (3C) [W]

An analysis of the foreign policy formulation process and a consideration of sectors other than the Canadian-American relationship.

POLS3247   Trudeau's Canada   3 ch (3C) [W]

This course will focus on Canadian and Quebec politics in the Trudeau era. Topics will include the Quiet Revolution, constitutional renewal, the 1980 referendum and the Charter of Rights and Freedoms. The course will also focus on the Charter era through an examination of key legal decisions. Finally, the course will examine Trudeau as a cultural icon in English Canada.

POLS3251   Canadian Federalism   3 ch (3C) [W]

Considers theories of federalism, the development of the Canadian federal system, and the impact of current issues.

POLS3257   Law and Politics in Canada   3 ch (3C) [W]

Analyzes the relationship between law and politics in Canada, with an emphasis on the impact of judicial decisions on Canadian politics. Topics covered include the Rule of Law in the Canadian Constitution, the judicial process, the Canadian Court system, judicial recruitment and selection, judicial independence, judicial review, and judicial decision-making.

POLS3312   Political Sociology (Cross-Listed: SOCI 3312)   3 ch (3C)

Examines the relations between society and the state by comparing traditional political sociology with the contemporary approach. Issues include the nation state as the center of political activity, how power is exercised through institutions, social groups, class, the production of identity or subjectivity, how globalization and social movements de-center state political activity, the impact of these changes on citizenship and democracy.

POLS3313   Political Psychology   3 ch (3C)

This course examines theories and perspectives from the field of psychology that provide insight into a wide range of political phenomena, including political participation, political communication, ethnic group relations, public policy design and foreign policy decision-making. Particular emphasis is placed on seminal thinkers and core ideas from the domains of cognitive psychology, social psychology and personality psychology that challenge the "rational actor" model often used in political science analysis.

POLS3323   Urban Politics and Policy (O)   3 ch (3C) [W]

Examines urban politics and policy problems in both a Canadian and comparative context. Introduces students to the key theories in urban politics scholarship and explores policy issues facing cities such as: democratic engagement; economic competitiveness; decentralization; poverty and polarization; intergovernmental relations; and climate mitigation and adaptation.

POLS3387   Theories of Comparative Politics   3 ch (3C) [W]

This course offers a survey of some of the major theoretical questions and perspectives in the field of comparative politics. Topics covered include the rise of the modern state, revolution, democratization, ethnic conflict, and economic development and underdevelopment. Particular attention is given to the use of the comparative method - focused comparisons of two or more states - to study variations in political development and shed light on theoretical debates.

POLS3392   Comparative Public Policy   3 ch (3C) [W]

Explores some of the major theoretical approaches to the comparative analysis of public policies across countries and regions. Examines why countries' policies diverge or converge and investigates factors influencing the policy making process in different jurisdictions.

POLS3415   Liberalism (O)   3 ch (3C) [W]

The historical and textual foundations of the liberal tradition and its contemporary variants. Central concepts and problems in the development of liberal thought to be examined will include: rights, property, liberty, toleration, and political participation.

POLS3418   Politics and Protest Music   3 ch (3C) [W]

This course surveys political protest music. Themes covered may range from Mozart's "The Magic Flute" to the ballads of Woody Guthrie through to anti-war songs over the last century.

POLS3433   Late Modern Political Thought   3 ch (3C) [W]

This course surveys recent political thinkers from the celebrated critic of modernity Friedrich Nietzsche to the post-modernist Jean-François Lyotard. It coheres thematically by focusing on their implicit and explicit responses to the three grand questions of the 20th century: What is wrong with modernity? What happened to the proletarian revolutions of Europe? How can the Holocaust be explained? Other thinkers examined include Lukács, Weber, Gramsci, Cassirer, Horkeimer, Arendt, de Beauvoir, Voegelin and Foucault.

POLS3441   Women Political Thinkers   3 ch (3C) [W]

Examines women's contributions to the history of Western ideas on politics, rationality, autonomy and the body, and violence and war. Key women thinkers include Mary Wollstonecraft, Virginia Woolf and Simone de Beauvoir.

POLS3443   Feminist Issues in Political Thought   3 ch (3C)

Examines critical issues in feminist theory. Its central focus is on the understanding of women's political and social roles found in the history of political thinking and the response to these arguments presented by contemporary feminist theorists.

POLS3446   Subjects, Citizens, Individuals: 3 ch (3C) [W]
**   Politics of the Early Modern World (O)**

Upheaval, change and disorder, a "world turned upside down": these are all terms associated with political life in seventeenth-century England. How did political writers, from Thomas Hobbes and Margaret Cavendish, to the Levellers and John Locke, conceive of this flux, and what roles did they envision for subjects, citizens and individuals in the early modern world? In this lecture/seminar course, we will map the rise of modern liberalism, individualism, notions of property, the state and the body.

POLS3447   Gender, Race and Global Politics   3 ch (3C) [W]

This course takes an intersectional approach to investigating the global politics of gender and 'race'. Questions considered will include: Why are there gendered, racialized inequities in the global distribution of power and resources? How have gender and race issues been addressed - and ignored - in international relations theory and practice? How do international organizations, international law, and transnational social movements seek to address gender and inequities, and how do these global activities shape local lived experiences? How do gender and racialization (and their corollaries, sexism, racism and colonialism) influence our experiences of global phenomena such as migration, armed conflict, health/disease, and trade?

POLS3461   Politics and Policy Analysis   3 ch (3C) [W]

Examines the relationship between politics, rationality, and public policy making. Topics include the policy cycle (agenda setting, policy information, decision making, implementation, and evaluation), policy durability and change, and globalization and policy making.

POLS 3471   When Bards are Bothered: 3 ch (3C) [W]
**   Political Critique in Literature (O)**

Examines the nature of political critique found in literature. It surveys different literary genres and forms, including tragedy, comedy, satire, poetry, the essay, the short story, and the novel. Some of the authors discussed may include Aristophanes, Sophocles, Thomas More, Daniel

Defoe, Jonathan Swift, and more recent writers such as Aldous Huxley, George Bernard Shaw, George Orwell, Virginia Woolf, and John Steinbeck.

POLS 3475   Marx and Marxism (O)   3 ch (3C) [W]

This course examines the formation and maturation of Marx's thought. It also explores Marx's enduring legacy in the 2nd international, the social democratic traditions of Europe and North America, post-WWI council communism, Western Marxism, Trotskyism, Marxist humanism, the New Left, and the socialist feminist tradition. It concludes with an assessment of the 21st-century left-wing movements ranging from 'occupy Wall Street' to 'green politics' through to the 'American democratic socialism'.

POLS3531   Political and Policy Writing   3 ch (3WS) [W]

This course familiarizes students with various writing styles relevant to the study and practice of politics with the goal of expanding and enhancing written communication skills. In addition to academic essay writing, styles and formats suited to public policy analysis, political advocacy and journalistic commentary are covered. Classes typically follow a workshop format emphasizing practical exercises, class discussion and peer feedback. Open to students from all disciplines.

POLS3533   Research Methods in Political Science   3 ch (3C) [W]

Intended to familiarize students with processes, methods and techniques of inquiry in political science. Required for all Honours students. Strongly recommended for Majors students.

POLS3534   Quantitative Approaches in Political Science   3 ch (3S) [W]

Introduces students to quantitative methodologies used in political science, with a focus on public opinion research and election studies. Students will gain a deeper understanding of the history and current practice of this type of academic research and will develop a basic foundation in methods of statistical analysis using political science datasets. **NOTE:** Students can obtain credit for only *one* of POLS 3534 and POLS 4534.

POLS3535   Qualitative Methods in Political Science (A)   3 ch (3C) [W]

Provides a grounding in qualitative research methods commonly used in political science, including research design and research ethics.

POLS3614   Ethics and International Politics   3 ch (3C) [W]

Provides a set of ethical frameworks and concepts with which we can assess the issue of how members of national states should treat "outsiders," under contemporary conditions of globalization. Also explores the practical implications of that issue in relation to international challenges of migration and refugees, international aid and development, political violence and warfare, humanitarian intervention, making and sustaining peace, and global poverty. Normally taught online.

POLS3615   International Relations Theory   3 ch (3C) [W]

Introduces students to the intellectual history of North American International Relations (IR), through in-depth exploration of some of the most significant work of IR theory. Theories explored include realism, liberalism, constructivism, Marxism, feminism, and post-colonial theory. Contemporary issues in IR (e.g. war, migration, the environment) are examined through these theoretical lenses. **NOTE:** Recommended prior course: POLS 2703, POLS 2403, or POLS 3403.

POLS3635   The Critical Study of War   3 ch (3C) [W]

Explores the nature of war in terms of the social relations of class, race, gender, ethnicity and sexual orientation. Particular focus is given to WWI, WWII, the Vietnam War, the Afghan War, the Iraqi Wars of 1991 and 2003, and the war on terror.

POLS3637   Capitalism and War   3 ch (3C) [W]

This course examines the scholarly literature on the link between warfare and world capitalism over the last century. Themes raised may include the extent of US arms spending, Western military doctrines, the Cold War, regional warfare, humanitarian crises and UN intervention. Specific focus is given to the wars in Vietnam, Central America, the Horn of Africa, Iraq and Afghanistan.

POLS3643   United Nations   3 ch (3C) [W]

Examines the role of international organizations in global politics, with specific focus on the UN as both a forum for interstate negotiations, and a global politics actor in its own right. Topics may include the UN's role in addressing armed conflict, promoting human rights and development, and protecting global health; the UN and/in the global economy; and direction and scope of UN reform.

POLS3647   Democratic Disengagement   3 ch (3C) [W]

Examines the sources of democratic discontent and declining political participation in Canada and other established democracies, along with

potential remedies. Topics covered include civil society and social cohesion, the changing role of political parties and the merits of institutional changes such as electoral reform and direct democracy.

POLS3714   Imperialism and Crisis   3 ch (3C) [W]

This course examines the analytical writings on capitalist imperialism down to the 2008 global crisis. Classical and contemporary writers surveyed may include Marx, Luxemburg, Hilferding, Lenin, Baran, Amin, Wood, Harvey and Callinicos. Topics addressed will range from militarism and warfare through to dependency, underdevelopment, cultural homogenisation, and 21st- century austerity.

POLS3716   Governance of the Global Economy (A)   3 ch (3C) [W]

Surveys the debates around the governance of global flows: trade, investment, finance, natural resources, and labour. The course engages with the main approaches and theories of International Political Economy (IPE).

POLS3717   The Politics of Nationalism   3 ch (3C) [W]

A general examination of nationalism as an ideology and political force, with some focus on specific nationalist movements in both the developed and developing worlds. Topics include: competing definitions of nations and nationalism, the underlying causes of nationalist unrest and secessionism, and methods of conflict management in ethnically divided societies.

POLS3718   International Security in Theory and Practice   3 ch (3C) [W]

Critically examines one of the most central and contested concepts in International Relations theory and practice: security. Questions considered include: what does it mean to be secure? What causes various forms of insecurity? How should we identify security threats: what 'counts' as an international security problem? What happens when issues are framed as security problems? The course examines theoretical approaches to security in IR including national, human, feminist, and critical security theories, and considers contemporary challenges that have been identified as international security problems, including terrorism, health/disease, climate change and migration.

POLS3724   Latin American Politics and Development (A)   3 ch (3C) [W]

Examines the evolution of Latin American development policies as well as the struggles for democracy and authoritarian tendencies of its political systems. The course takes a regional and comparative approach with cases from South America, Central America, and the Caribbean.

POLS3845   Law and Public Policy   3 ch (3C) [W]

Examines the extent to which legal rules (laws, regulations and court decisions) as well as institutions reflect explicit public policy goals. Topics and case studies in three core areas of the law -- property, contracts, and crime -- are used to illustrate and develop two related ideas. First, viewing the law through a public policy lens can lead to a better understanding of how the legal system actually operates. Second, analysis of the law through a public policy lens provides a framework with which to assess and critique current law in order to align it with improved overall social well-being. **NOTE:** Students cannot obtain credit for both ECON 3845 and POLS 3845. POLS 3845 is only open to students in their 3rd or 4th year.

POLS3900   Independent Study in Political Science   6 ch (6C)

Upon application through the co-ordinator of honours and majors programs, students pursuing an honours or majors degree in Political Science may undertake independent studies with a member of the department. It is expected that students will have a clear idea of their intended area of study and will submit a written proposal justifying it as an independent studies course. No student will be allowed to take more than 6 ch of independent study in completing the requirements for a majors or honours degree in political science. Independent studies courses will NOT count as meeting the honours thesis requirements.

POLS3903   Independent Study in Political Science   3 ch (3C)

Upon application through the co-ordinator of honours and majors programs, students pursuing an honours or majors degree in Political Science may undertake independent studies with a member of the department. It is expected that students will have a clear idea of their intended area of study and will submit a written proposal justifying it as an independent studies course. No student will be allowed to take more than 6 ch of independent study in completing the requirements for a majors or honours degree in political science. Independent studies courses will NOT count as meeting the honours thesis requirements.

POLS3905   Independent Study in Political Science   3 ch (3C)

Upon application through the co-ordinator of honours and majors programs, students pursuing an honours or majors degree in Political Science may undertake independent studies with a member of the department. It is expected that students will have a clear idea of their intended area of study and will submit a written proposal justifying it as an

independent studies course. No student will be allowed to take more than 6 ch of independent study in completing the requirements for a majors or honours degree in political science. Independent studies courses will NOT count as meeting the honours thesis requirements.

POLS4416   Canadian Political Thought (O)   3 ch (3S) [W]

Historical and comparative examination of the various strands of thought that make up the Canadian political tradition: liberalism, conservatism, socialism and nationalism.

POLS4495   Gender and War: 3 ch (3S) [W]
Historical and Contemporary Perspectives (O)

Exploring a range of topics from women's experiences as soldiers to the social construction of masculinities to suit the war system, and drawing upon a range of sources, including historical writings by women on war, drama, poetry and fiction, as well as recent political theorizing and analysis, this course puts the gendered aspects of war under the microscope. Writers considered include Margaret Cavendish, Virginia Woolf, Sara Ruddick, Judith Butler, R.W. Connell and Michael Kimmel.

POLS4496   Thucydides: War and Empire   3 ch (3S) [W]

Examines *The History of the Peloponnesian War* as the founding text of International Relations. The course will also focus on the various readings of the *History*.

POLS4721   Politics and the Human Condition   3 ch (3S) [W]

This course surveys the relationship between capitalism, alienation, and the political crises of contemporary liberal democracies. It draws on a range of intellectuals including Erich Fromm, Leo Lowenthal, and Hannah Arendt. Topics surveyed may include estrangement from nature, loneliness, and social malaise, especially as they relate to such things as demagogic politics, activism and protest, and the realignment of traditional political parties.

POLS4723   The Rise of the Far Right   3 ch (S) [W]

Recent years have witnessed the rise of various political parties and movements of the far right in both Europe and North America. This course will examine these organizations and the broader political environment in which they have emerged in order to better understand the causes and consequences of this troubling trend.

POLS4724   Topics in Environmental History and Politics   3 ch (3S) [W]

This course surveys topics in North American environmental politics and history, including climate change, resource development, and water management. It examines the role of governments, the environmental movement, and industry. Finally, it examines how the environment as an idea has changed over time.

POLS4725   Climate and Energy Policy   3 ch (3S) [W]

Examines climate and energy policy-making in a variety of jurisdictions including Canada. The course explores how institutions, interests, and ideas shape climate and energy policy design and implementation. Topics covered include carbon pricing, renewable energy, transportation, infrastructure, pipeline politics and divestment.

POLS4727   The Politics of Global Health   3 ch (3S) [W]

This course considers challenges in contemporary global health governance by examining the global response to a specific disease/health issue, focusing on how the global South is implicated in this governance and disease response. Questions we will explore include: how is health global? What is the relationship between 'the global' and 'the local' in global health governance? How effective are various global health strategies, programs and frameworks, and in what ways do they have uneven effects on different populations and regions? What are the power relations between actors including states, international and multilateral organizations, social movements, and the private sector? What are the structural and political drivers of health inequity? Recommended prior course: POLS 2303, POLS 2703, IDS 2001, IDS 2003 or permission of course instructor.

POLS4734   Political Economy of Energy and   3 ch (3C) [W]
the Environment (A)

Surveys recent debates around the political economy of energy and its impact on the environment. Discusses the global energy market of hydrocarbons and its alternatives in the midst of climate change and political transformations globally.

POLS4735   Theories of the Policy Process (A)   3 ch (3C) [W]

Examines foundational and contemporary theories explaining variation in public policy processes across space and time. Provides a strong foundation in comparative public policy, process theories, and the politics of policy adoption and implementation. Explores a variety of topic areas, including social, environmental, and economic policy.

POLS4900   Honours Thesis   6 ch (6C) [W]

A compulsory reading and research course for fourth year honours students. The student prepares a research program in consultation with a professor in the field concerned and is expected to present a research essay after regular consultations with the professor concerned who will be assigned to the student by the chair of the department.

PSYCHOLOGY

NOTE: See beginning of Section H for abbreviations, course numbers and coding. Students should consult the Timetable for the latest listing of courses to be offered in each term.

PSYC1013   Introduction to Psychology I   3 ch (3C)

A general survey of perspectives and methods in selected areas of psychology including learning, memory, cognitive and biological psychology. Students will be asked to participate in various learning and research activities. Some course credit may be earned by participation in these activities.

PSYC1023   Introduction to Psychology – II   3 ch (3C)

A general survey of perspectives and methods in selected areas of psychology including personality, developmental, clinical and social psychology. Students will be asked to participate in various learning and research activities. Some course credit may be earned by participation in these activities.

PSYC2103   Quantitative Research Methods   3 ch (3C) [W]

This course provides an introduction to experimental Psychology as an empirical science. Students learn about the steps involved in research, such as designing and conducting experiments. Basic applications of statistical methods are broached. Additionally, students learn how to report formally on their research projects. Students are involved in a research project as participants and as researchers. This course is required for students planning to Minor, Major or Honours in Psychology. *Prerequisite:* Introductory Psychology (6 ch). Students who have received credit for PSYC 2123 cannot receive credit for PSYC 2103.

PSYC2113 Introduction to Statistical Methods in Psychology 3 ch (3C) [W]

An introduction to statistical analysis for psychologists. Topics include analysis techniques relevant to correlational, observational and experimental research designs; relevant statistical theory; and hypothesis testing. Required for students planning to Major or Honour in Psychology. *Prerequisite:* Introductory Psychology (6 ch) and PSYC 2103/PSYC 2123.

PSYC2203   Foundations of Developmental Psychology   3 ch (3C) [W]

Covers physical, cognitive, language, and social/emotional development from a variety of theoretical perspectives. The interrelatedness of these domains also will be discussed. Several themes which underlie the study of development (e.g., nature/nurture; continuity/discontinuity) will be reviewed and students will explore how these themes permeate developmental research. *Prerequisite:* Introductory Psychology (6 ch).

PSYC2313   Foundations of Clinical Psychology   3 ch (3C) [W]

An introduction to the main theories, research approaches, and intervention perspectives of clinical psychology. Topics dealt with include professional issues in clinical psychology, concepts and history of abnormality, assessment and diagnosis of psychological disorders, research perspectives in clinical psychology, and modes of psychotherapy. The course is intended to expose the student to the basic concepts, theories and issues in psychopathology and psychotherapy for more advanced courses in the clinical domain. *Prerequisite:* Introductory Psychology (6 ch).

PSYC2403   Foundations of Social Psychology   3 ch (3C) [W]

Examines individual personality and behaviour in relation to other individuals, society and culture. Topics include social perception, attitudes and values, conformity and obedience, prejudice and discrimination, aggression and violence, etc. *Prerequisite:* Introductory Psychology (6 ch).

PSYC2515   Foundations of Learning   3 ch (3C) [W]

Examines the psychological theories of learning, including cognitive, social and behavioural theories of learning. These are discussed in terms of their interrelatedness and the research supporting each. Topics include principles of human behaviour, conditioning, and non-associative and associative learning. *Prerequisite:* Introductory Psychology (6 ch). Students who have received credit for PSYC 2613 cannot receive credit for PSYC 2515.

PSYC2603   Foundations of Memory and Cognition   3 ch (3C)

An introduction to the fundamental principles of human memory, cognition and information processing in the laboratory and everyday world. Topics include basic cognitive processes, the representation and organization of

knowledge, reasoning, problem solving, etc. *Prerequisite:* Introductory Psychology (6 ch).

PSYC2703   Foundations of Biological Psychology   3 ch (3C) [W]

An introduction to basic neurophysiology, neurochemistry and neuroanatomy for humans and other animals. The course will cover the methods used to discover the fundamental processes underlying neural function and provide basic knowledge for an understanding of how the nervous system is able to produce and control behaviour. *Prerequisite:* Introductory Psychology (6 ch) or permission of instructor.

PSYC3033   Health Psychology   3 ch (3C)

This course introduces students to the biopsychosocial approach to health and disease including prevention, development, course, and adaptation to illness. Students will develop an understanding of the mind/body connection, the influence of social and physical environments on our health, cognitive processing of health information, health belief models, and the link between personality traits and health. Psychological approaches to the promotion of health and behaviour change will be examined. A personal health promotion project will be required. *Prerequisites:* Introductory Psychology (6 ch). Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063 and PSYC 3073 may be counted toward a Major or Honours In Psychology.

PSYC3043   Human Sexuality   3 ch (3C) [W]

Provides a broad introduction to the psychology of human sexuality, including examination of such specific topics as sexual anatomy, sexual behaviour throughout the lifespan, sexual response, sexual dysfunction and therapy, sexual variation, and pregnancy and childbirth. Emphasis on placing empirical findings within physiological, personal, interpersonal and social frameworks. *Prerequisite:* Introductory Psychology (6 ch). Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063 and PSYC 3073 may be counted toward a Major or Honours In Psychology.

PSYC3053   Personality   3 ch (3C) [W]

An introduction to classic and contemporary theoretical and scientific approaches to the study and assessment of personality, with a focus on developing an integrated understanding of human personality within its biological, social, historical and cultural contexts. *Prerequisite:* Introductory Psychology (6 ch). Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063, and PSYC 3073 may be counted toward a Major or Honours In Psychology.

PSYC3063   Psychology and the Internet   3 ch (3C)

In this course we will examine the unique psychological features of cyberspace and how human behaviour is shaped in this new social realm. Topics related to human interaction, children and the Internet, sexuality on the Internet, computer-mediated communication, Internet addiction, and global consciousness, etc. will be covered. *Prerequisite:* Introductory Psychology (6 ch). Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063 and PSYC 3073 may be counted toward a Major or Honours In Psychology.

PSYC3073   The Psychology of High Performance   3 ch (3C)

This course serves as introduction to the field of performance psychology. The course provides an overview of the theoretical and empirical roots of contemporary performance psychology. Throughout the course, students will discuss how research informs practice and, where relevant, the possible difficulties in applying research findings in real-world settings. Emphasis is placed on how psychology is being applied to enhance the performance of a wide range of groups including athletes, musicians, CEOs, and educators. The course exposes students to the various psychological factors that threaten elite performance and the interventions that have been developed to mitigate against these factors. *Prerequisites:* Introductory Psychology (6 ch). Please note that no more than three of PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063, and PSYC 3073 may be counted toward a Major or Honours In Psychology.

PSYC3113   Introduction to Statistical Inference in   3 ch (3C 1L) (LE) Experimental Psychology

Introduces experimental design and statistical inference in psychological research. Design decision-making and computational procedures up to analysis of variance are presented. Labs involve collection and analysis of psychological data. PSYC 3113 is required of Honours students in Psychology. *Prerequisites:* PSYC 2103/PSYC 2123 and PSYC 2113 or PSYC 2103/PSYC 2123 and PSYC 2903.

PSYC3123   Introduction to Measurement Theory   3 ch (2C 2L) (LE)

Introduces traditional problems in the measurement of psychological concepts. Labs will involve the development and evaluation of student designed tests and measures. *Prerequisites:* PSYC 2103/PSYC 2123 and PSYC 2113.

PSYC3151   Basic Research Seminar I   3 ch (3S) (LE) [W]

Involves active participation in several of the activities related to an empirical research project including planning and development of research, conducting a study, and collection and analysis of data. Students will be required to prepare a formal research paper. The actual program will be determined by the student and a faculty supervisor. Normally restricted to students in their third year whose academic performance would allow them to enter the Honours program during their fourth year. *Prerequisites:* PSYC 2103/PSYC 2123 and PSYC 2113 and two Psychology foundation courses, permission of a faculty supervisor and Basic Research Coordinator, and a cumulative grade point average of at least 3.3 in Psychology courses.

PSYC3152   Basic Research Seminar II   3 ch (3S) (LE) [W]

Involves active participation in several of the activities related to an empirical research project including planning and development of research, conducting a study, and collection and analysis of data. Students will be required to prepare a formal research paper. The actual program will be determined by the student and a faculty supervisor. Normally restricted to students in their third year whose academic performance would allow them to enter the Honours program during their fourth year. *Prerequisites:* PSYC 2103/PSYC 2123 and PSYC 2113 and two Psychology foundation courses, permission of a faculty supervisor and Basic Research Coordinator, and a cumulative grade point average of at least 3.3 in Psychology courses.

PSYC3213   Language Development   3 ch (3C 1T)

Examines current views on language development and discusses the interaction between cognitive, social, and linguistic development. Possible topics include critical period for language, preverbal communication, gestural communication, and vocabulary and grammar development. *Prerequisite:* PSYC 2203.

PSYC3215 Development of Individuals with Exceptionalities 3 ch (3C) [W]

A discussion of issues that may arise for individuals with various exceptionalities at different points in the lifespan. Topics may include prenatal testing, academic/vocational placement, independent living, and parenting. The causes, characteristics, and challenges of specific cognitive, language, sensory, and physical exceptionalities may be reviewed. *Prerequisite:* PSYC 2203. **NOTE**: Credit may not be obtained for both PSYC 3215 and PSYC 4215.

PSYC3233   Social Development   3 ch (3C) [W]

A review of theories and research examining how various social contexts contribute to individual development. The role of family, peers, and individuals' involvement in school, paid or unpaid work, and community settings will be explored. Content may focus on social development in children and adolescents, adults, the elderly, or across the lifespan, depending on the expertise of the instructor. *Prerequisite:* PSYC 2203.

PSYC3243   Cognitive Development   3 ch (3C)

Examines cognitive development from a variety of theoretical perspectives. Topics covered include mental representation, attention, memory, and perception. Content may focus on cognitive development in children, adults, the elderly, or across the lifespan, depending on instructor availability. *Prerequisite:* PYSC 2203.

PSYC3253   Family Processes   3 ch (3C) [W]

Examines the theoretical and empirical research on family relationships, the factors that influence functioning, and how families change over time. Topics include intimacy relationships, transgenerational processes, family rituals and rules, and interpersonal communication and boundaries. Relevant case examples are discussed to illustrate the complexity of family relationships and the stressors that families may face. *Prerequisite:* PSYC 2203.

PSYC3263   Psychology of Women   3 ch (3C) [W]

A lifespan approach to the lives of girls and women, examined in the context of traditional and alternative roles, life events, and status in society. Provides an overview of theories and research on female development, behaviour, and personality. *Prerequisite:* PSYC 2203 or permission of instructor.

PSYC3273   Adolescent Development   3 ch (3C) [W]

A review of theories and research examining physical and psychological development during adolescence. Specific topics include puberty, identity, sexuality, and health. Emphasis is placed on normative behaviour and how adolescents' characteristics interact with their contexts (e.g., family, school, peers) to shape development. *Prerequisite:* PYSC 2203.

PSYC3313   Psychological Testing   3 ch (2C 1T) [W]

The creation of tests that measure psychological phenomena is a major endeavour within the discipline of psychology. The administration, scoring

and interpretation of psychological tests is a significant aspect of the work of researchers and practicing clinical psychologists. This course examines existing tests that measure phenomena such as cognition and personality. The course introduces principles of psychological testing, relevant statistical concepts, and the methods by which tests are developed. *Prerequisites:* PSYC 2113 and PSYC 2313.

PSYC3315 Applications of Cognitive Behavioural Techniques 3 ch [W]

Empirically based cognitive behavioural techniques derived from the clinical psychology and psychiatric traditions are explored in detail and applied to the management of anxiety and fear, treatment of medical and psychological disorders, and the management of home and classroom environments. A self-management project is required. *Prerequisite:* PSYC 2313 or PSYC 2603. Students who have received credit for PSYC 3615 cannot receive credit for PSYC 3315.

PSYC3323 Approaches to Psychotherapy 3 ch (3C) [W]

Surveys prevailing theories and methods of psychotherapy, such as psychoanalysis, client-centred therapy, Gestalt therapy, cognitive-behavioural therapy, family systems approaches, etc. Emphasis is on the techniques used in psychotherapy, and various techniques will be contrasted. Each theory and method is evaluated in terms of research examining therapeutic process and outcome. *Prerequisite:* PSYC 2313.

PSYC3333 Psychology of Addiction 3 ch (3C) [W]

Critically examines the theoretical models and current controversies related to conceptualization, etiology, diagnosis, policy, research, and treatment of substance-based and behavioural addictionos. The influence of neurobiological, behavioural, psychological, and social factors is examined. *Prerequisite:* PSYC 2313.

PSYC3343 The Psychology of Crime 3 ch [W]

The purpose of this course is to provide an overview of the area of the psychology of crime with a special focus on Clinical Criminology, also referred to as Forensic Psychology. Issues pertaining to the following topics will be explored: 1) the nature and definition of the crime, 2) the development of the offender (theoretical perspectives), 3) the intersection of crime and mental health, and 4) the victim. *Prerequisite:* PSYC 2313.

PSYC3353 Adult Psychopathology 3 ch (3C) [W]

This is an advanced course which adopts a scientist-practitioner perspective on the understanding, assessment, and treatment of adult psychological disorders. Topics can include psychological theories and treatment of depression, anxiety disorders, schizophrenia, eating disorders, substance use disorders, stress and physical health, dissociative disorders and personality disorders. The course will take an integrative, problem-oriented approach by simultaneously examining the theory, research and treatment literature that is pertinent to each disorder. *Prerequisite:* PSYC 2313.

PSYC3373 Child and Adolescent Psychopathology 3 ch (3C) [W]

Survey of major categories of behavioural and emotional problems of childhood and adolescence. Topics may include depression, anxiety, attention deficit-hyperactivity disorder, learning disabilities, and eating disorders. *Prerequisites:* PSYC 2203 and PSYC 2313.

PSYC3383 Women and Mental Health 3 ch (3C)

Explores and critically evaluates theory and research on mental health problems in girls and women from a feminist perspective. Topics addressed include premenstrual syndrome (PMS) and the role of hormones in girls' and women's mental health problems; depression; eating disorders; dissociative disorders and other sequelae of abuse; and feminist approaches to therapy. *Prerequisite:* PSYC 2313 or permission of instructor.

PSYC3403 Applied Social Psychology 3 ch (3C) [W]

This course explores the application of social psychology to understand everyday life experience and to solve current social problems. Topics may include improving interpersonal relationships, promoting team cohesion, evaluating media influence, enhancing job satisfaction, promoting community health, and addressing the issues of social justice and equality. *Prerequisite:* PSYC 2403.

PSYC3413 Introduction to Industrial/Organizational Psychology 3 ch (3C)

Provides an overview of the origins of I/O psychology and the role I/O psychology plays in the workplace. Emphasises how organizational development and organizational change can influence employees, their workplace health and safety, and their work-life balance. Also focuses on mental health issues in the workplace and how I/O psychology assists employees and their organizations in managing them. Additional topics such as employee performance and workplace psychometrics are covered. *Prerequisites:* PSYC 1013 and PSYC 1023.

PSYC3415 Community Psychology 3 ch (3C) [W]

This course is designed to introduce students to the science and practice of community psychology, which is the study of psychological solutions to community based problems. Community psychology extends psychology's role beyond a focus on the individual towards a greater understanding of groups, organizations, and communities. Topics may include prevention, under-served populations, cultural diversity, political action, effects of stress on mental health, community organization, empowerment, and mutual help. There will be a focus on how research and science intersect with the practical aspects of working successfully with people in their own communities. *Prerequisite:* PSYC 2403.

PSYC3423 Group Processes 3 ch (1C 2L) [W]

An exploration of the social psychology of group dynamics. Topics may include group formation and functioning, prejudice, discrimination, leadership, social identity, conformity, group problem solving and decision-making, and inter-/intra-group conflict and cooperation. Emphasizes the theoretical and experiential understanding of relevant concepts. *Prerequisite:* PSYC 2403.

PSYC3433 Social Cognition 3 ch (3C) [W]

A review of research and theories examining how people make sense of their social world: How they perceive, represent, interpret, and remember information about themselves and about other individuals and groups. Topics may include representation, recall, and use of social knowledge, controllability of thought processes, effects of feelings and desires, and stereotype activation and use. Experimental and quasi-experimental methodologies employed in social psychology will also be discussed. *Prerequisite:* PSYC 2403.

PSYC3443 Culture and Psychology 3 ch (3C) [W]

A survey course of theory, methods and research in culture and psychology. Examines the role of culture across a range of psychological areas, including perceptual and cognitive processes, human development, language, gender, and social behaviour. Topics may include cultural variations and similarities in social psychological functioning, how some cultural patterns get established and maintained, individuals' application of cultural knowledge in concrete situations, and how individuals negotiate cultural identities in multicultural contexts. *Prerequisite:* PSYC 2403.

PSYC3453 Close Relationships 3 ch (3C) [W]

This course provides an overview of the psychology of close relationships from a social psychological perspective, with a particular emphasis on romantic relationships and friendships. The major theories of close relationships are emphasized, including examinations of evolutionary, attachment, and cognitive approaches, with a strong emphasis on empirical evidence. Research related to topics such as attraction, love, shyness, relationship formation and maintenance, common problems (jealousy, conflict, deception), satisfaction, commitment and well-being are explored, with methodological concerns discussed within the context of each topic. *Prerequisite:* Introductory Psychology (6 ch).

PSYC3515 Introduction to Applied Behaviour Analysis 3 ch (3C) [W]

An introduction to the basic principles of applied behaviour analysis and fundamental procedures used in the field. The course provides coverage of how these principles can be used to explain human behaviour as well as assessments and interventions for behaviour acquisition and replacement. Topic areas include concepts and principles of behaviour analysis; measurement of behaviour; experimental designs in applied contexts; functrional behaviour assessment; and behaviour change procedures. *Prerequisite:* Introductory Psychology (6 ch). Students who have received credit for PSYC 3663 cannot receive credit for PSYC 3515.

PSYC3525 Topics in Behavioural Analysis: Ethical Considerations 3 ch

This course familiarizes students with ethical issues, responsibilities, and professional behaviour of behaviour analysts. The case method is used to explore issues related to informed consent, due process, protection of confidentiality, and selection of least intrusive, least restrictive behaviour change procedures. Ethical decision-making processes and evidence-based practice are emphasized, and the relationship between ethics and the law are explored. *Prerequisite:* One of PSYC 2613, PSYC 2515, PSYC 3663, or PSYC 3515. Offered online only. Available only to students enrolled in the certificate progam. Students who have received credit for PSYC 3365 cannot receive credit for PSYC 3525. *Co-requisite:* PSYC 3663. Offered online only. Available only to students enrolled in the certificate program.

PSYC3535 Topics in Behaviour Assessment 1 ch

This course focuses on the research literature related to creating and conducting skills and functional behaviour assessments. Topics include skills assessments, use of criterion-referenced behaviour assessments, indirect and direct behaviour assessments, and various functional analyses. *Prerequisiters:* Either PSYC 3663 or PSYC 3515. Offered

online only. Available only to students enrolled in the certificate program. Students who have received credit for PSYC 3325 cannot receive credit for PSYC 3535.

PSYC3545   Topics in Behaviour Intervention   1 ch

This course focuses on the research literature pertaining to advancements in behaviour interventions. Emphasis is placed on tying behaviour intervention plans to results of functional behaviour assessment or skills assessments. Topics include antecedent intervention strategies, consequence-based intervention strategies, and self-management strategies. *Prerequisites:* Either PSYC 3663 or PSYC 3515. Offered online only. Available only to students enrolled in the certificate program. Students who have received credit for PSYC 3335 cannot receive credit for PSYC 3545.

PSYC3555   Skills in Applied Behaviour Analysis   1 ch

This course complements the material covered in the other Certificate in Applied Behaviour Analysis courses by offering hands-on training and practice in the applications of Applied Behviour Analysis. Students learn the standards of practice in the field of Applied Behaviour Analysis in addition to learning how to conduct preference assessments and implement simple intervention strategies through instruction, demonstration and practice. *Prerequisites:* Either PSYC 2613 or PSYC 2515 and either PSYC 3663 or PSYC 3515. Offered online only. Available only to students enrolled in the certificate program. Students who have received credit for PSYC 3345 cannot receive credit for PSYC 3555.

PSYC3565   Clinical and Organizational Applications   3 ch
of Behaviour Science

This course explores the application of behaviour analysis in health, psychological, community, and organizational settings. There is a focus on conducting applied research and measuring intervention effectiveness in applied settings. Organizational applications focus on the use of behaviour analysis to understand human performance in the workplace and topics may include competency-based personnel assessment and training, behaviour-analytic management, behaviour-based safety, behavioural systems analysis, and other interventions used in organizational settings. Clinical applications focus on the application of behaviour analysis to human wellness and topics may include sleep difficulties, feeding problems, addictions, obesity, and gerentology. *Prerequisite:* PSYC 2515 or PSYC 3515.

PSYC3613   Laboratory in Learning, Memory and Cognition (O)   3 ch (3L)

Empirical investigation of current issues in Learning and Memory. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisite:* PSYC 3623

PSYC3623   Cognition   3 ch (3C)

Covers the basic cognitive processes of memory, problem solving and reasoning, concept formation, and decision making. *Prerequisite:* PSYC 2603.

PSYC3633   Motivation and Emotion   3 ch (3C) [W]

A critical examination of contemporary theory and research on motivation and emotion as explanatory concepts for key aspects of personal and social human function. Topics covered include the motivational and emotional determinants of approach and avoidance behaviour, incentive decision-making, intrinsic and extrinsic aspects of control, stress and coping, emotional dysfunction, prosocial behaviours, emotion regulation, happiness and positive well-being. *Prerequisite:* PSYC 2603.

PSYC3643   Adult Developing and Aging   3 ch (3C) [W]

This course considers the study of adult development and aging. Possible topics include the changes in physical development, learning, memory, cognition, personality, and social cognition that are associated with aging. *Prerequisite:* PSYC 2603 or permission of the instructor.

PSYC3713   Physiological Psychology   3 ch (3C) [W]

Examines the physiological bases of behaviour as determined by genetic, neurophysiological, neurochemical and neuroanatomical experimentation. *Prerequisite:* PSYC 2703.

PSYC3723   Physiological Psychology Laboratory   3 ch (3L) [W]

Use of psychophysiological methods, instrumentation and techniques (e.g., event-related potential brain recordings, behavioural observation) in the study of the physiological bases of behaviour in humans and other animals. Students will conduct research experiments and learn the basics of human electrophysical recording, data collection, and analysis. *Prerequisite:* PSYC 3713.

PSYC3733   Neuropsychopharmacology   3 ch (3L)

Basic principles of the study of drugs that influence neural systems and induce changes in behaviour. The course will address psychotropic drug

assessment, from molecular and biochemical characterization, to behavioural effects in animal test paradigms and finally to clinical applications. *Prerequisite:* PSYC 2703.

PSYC3743   Drugs and Behaviour   3 ch (3C)

Examines sedatives, hypnotics, stimulants, anaesthetics, analgesics, paralytics, psychotogenics and psychotherapeutics. Includes history of use, presumed mechanisms of action, and effects on human and animal behaviour. Emphasis on how drugs affect the quality of human experience through relief of pain, addiction, treatment of mental illness, etc. *Prerequisite:* PSYC 2703 or permission of instructor. Students who have received credit for PSYC 3023 can not receive credit for PSYC 3743.

PSYC3745   Survey of the Senses   3 ch (3C) [W]

Provides a broad introduction to the five major senses and the necessary background for PSYC 3753 or PSYC 4743. Emphasizes issues relevant to psychophysical measurement, as well as physiological and perceptual processes underlying vision, hearing, touch, smell and taste. Discussion is in the context of the central traditions of perceptual research such as empiricism and Gestalt. *Prerequisite:* PSYC 2703.

PSYC3753   Laboratory in Vision and Hearing   3 ch (3C)

Individual laboratory exercises in visual and auditory processes. To familiarize the student with the experimental methodology of sensory psychology, and the introductory assessment of sensory deficits (visual defects, hearing loss, etc.). *Prerequisite:* PSYC 3745.

PSYC3773   Experimental Human Neuropsychology   3 ch (3C) [W]

Emphasis will be on studies that help us to understand the relationship between behaviourally observable phenomena and corresponding brain function. The course will examine what has been revealed about human brain function through the use of specialized types of psychological tests and measures, through biophysical imaging techniques that give us a view of human brain function, and finally through damage to the human nervous system and research on its effects. *Prerequisite:* PSYC 2703.

PSYC3783   Experimental Neuropsychology Laboratory   3 ch (3L) [W]

Current issues in research in neuropsychology will be examined. *Prerequisite:* PSYC 3773.

PSYC4003   Topical Seminar in Psychology (O)   3 ch (3S) [W]

An advanced seminar on a topic not represented by one of the Teaching Areas in Psychology. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisite:* permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4053   History of Psychology   3 ch (3C)

Critically examines the content, concepts, techniques and issues of the historical antecedents of modern psychology. Primary as well as various secondary sources are consulted.

PSYC4103   Special Topics in Quantitative Psychology (O) 3 ch (3S) [W]

An advanced course on a topic in Quantitative Psychology. Open to upper level students in the Majors or Honours programs in Psychology. *Prerequisite:* PSYC 2103/PSYC 2123 and PSYC 2113, and PSYC 3113 or permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4110   Honours Research Seminar   6 ch (3S 3S) (LE)

Organization and discussion of Honours Thesis research projects. Normally available only to students who have been admitted to a Psychology Honours Program and who are in their final year. Required of Honours students in Psychology during their fourth year. *Prerequisites:* PSYC 3151 or PSYC 3152, permission of a faculty supervisor and Honours Research Coordinator, and a cumulative grade point average of at least 3.6 in Psychology courses.

PSYC4123   Special Topics in Qualitative Psychology (O)   3 ch (3S) [W]

An advanced course on a topic in Qualitative Psychology. Open to upper-level students in the Majors or Honours programs in Psychology. *Prerequisite:* PSYC 2113 and permission of the instructor. Please note that students should consult the Department for current offerings.

PSYC4203   Topical Seminar in   3 ch (3S) [W]
Developmental Psychology (O)

Discussion of current issues in Developmental Psychology. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2203 and permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4223   Topical Seminar in Sex and Gender   3 ch (3C) [W]

Provides a critical appraisal of the theories and research methods in the area of sex and gender differences and similarities. Specific topics include

morality, stereotypes, feminist perspectives, role of the media, scientific method, and epistemological tendencies. Examines the construction of knowledge, and the development of positions, with regards to sex and gender. *Prerequisite:* PSYC 2203 or PSYC 3263 or permission of instructor.

PSYC4303   Topical Seminar in Clinical Psychology (O)   3 ch (3S) [W]

Discussion of current issues in Clinical Psychology. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2313 and permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4403   Topical Seminar in Social Psychology   3 ch (3S) [W]

Discussion of current issues in Social Psychology. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2403 and permission of instructor. Please note that students should consult the department for current offerings.

PSYC4515   Advanced Applied Behaviour Analysis   3 ch (3S) [W]

Focus on considerations in providing applied behaviour analysis intervention services in an applied setting. Topics include measurement and analysis of intervention effectiveness, key concepts, methods, and ethical considerations associated with behavioural assessment in applied settings, using assessment results in writing behaviour intervetion plans, and ensuring treatment fidelity. *Prerequisite:* Either PSYC 2613 or PSYC 2515 and either PSYC 3663 or PSYC 3515. Students who have received credit for PSYC 3673 cannot receive credit for PSYC 4515.

PSYC4525   Applied Behaviour Analysis Practicum I/   6 ch
Independent Study I

This practicum is a field placement for students. Students are required to complete 65 hours a month of practical experience in Applied Behviour Analysis. These placements combine formal education with community service by providing work experience useful for the career and professional profile. Open only to students in the Certificate in Applied Behaviour Analysis program. A Board Certified Behaviour Analyst must provide supervision over experience hours in either individual or group format to meet the Behaviour Analyst Certification Board experience requirements. During this practicum, the basics of behaviour intervention implementation and behaviour assessment are covered and practiced. **Note:** Available only to students enrolled in the certificate program. Students who have received credit for PSYC 4313 cannot receive credit for PSYC 4525.

PSYC4535   Applied Behaviour Analysis Practicum II/   6 ch
Independent Study II

This practicum component is a field placement for student. Students are required to complete 65 hours a month of practical experience in Applied Behaviour Analysis. These placements combine formal education with community service by providing work experience useful for the career and professional profile. Open only to students in the Certificate in Applied Behaviour Anlaysis program. A Board Certified Behaviour Analyst must provide supervision over experience hours in either individual or group format to meet the Behaviour Analyst Certification Board experience requirements. During this practicum writing and implementing individualized behaviour intervention plans based on the results of assessments are covered and practiced. *Prerequisite:* Either PSYC 4313 or PSYC 4525. Available only to students enrolled in the certificate program. Students who have received credit for PSYC 4323 cannot receive credit for PSYC 4535.

PSYC4565   Applied Behaviour Analysis Practicum III /   6 ch
Independent Study III

This practicum is a field placement for students. Students are required to complete 65 hours a month of practical experience in Applied Behaviour Analysis. These placements combine formal education with community service by providing work experience useful for the career and professional profile. Open only to students in the Certificate in Applied Behaviour Analysis Program. A Board Certified Behaviour Analyst must provide supervision over experience hours in either individual or group format to meet the Behaviour Analyst Certification Board experience requirements. During this practicum ongoing monitoring and implementation of behaviour plans, case management, and competency-based training procedures are coverd and practiced. *Prerequisites:* PSYC 4535. Available only to students enrolled in the certificate program.

PSYC4603   Topical Seminar in Learning, Memory   3 ch (3S) [W]
and Cognition (O)

Discussion of current issues in Learning, Memory and Cognition. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2603 and permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4713 Topical Seminar in Physiological Psychology (O) 3 ch (3S) [W]

An in-depth exploration of current issues in Physiological Psychology. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisite:* One of PSYC 3713, PSYC 3743, PSYC 3773 or permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4743   Topical Seminar in Sensation-Perception (O) 3 ch (3S) [W]

Coverage of various issues in Sensation and Perception in a seminar format. Emphasis is on visual and auditory processes, with some coverage of taste, smell, and touch. Laboratory work is included. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2703 and permission of instructor. Please note that students should consult the Department for current offerings.

PSYC4773   Topical Seminar in Neuropsychology (O)   3 ch (3S) [W]

Current issues in research in Neuropsychology will be examined. Open to Upper Level students Majoring or Honouring in Psychology. *Prerequisites:* PSYC 2703 and permission of instructor. Please note that students should consult the Department for current offerings.

PUBLISHING

NOTE: See beginning of <u>Section H</u> for abbreviations, course numbers, and coding.

PUB2103   The Evolving Publishing Environments   3 ch (3C) [W]

An overview of the publishing industry, this course examines various technological, economic, legal, and cultural pressures acting on the publishing environment today, including the movement from print to electronic publishing and the shift from brick and mortar stores to online shopping carts. Students will explore the evolving roles of writers, agents, editors, and designers and will consider some of the legal and intellectual property matters at play in the contemporary publishing environment. They will also learn about the business side of publishing, including the roles that marketing, advertising, sales, finances, and distribution can play in deciding what will be published. The course ends with a look at the rise of self-publishing, the use of social media in publishing, the preservation of Canadian cultural content in a global age, and some current debates on diversity, economics, and the problems created by an abundance of published content. **NOTE**: Enrolment limited to 30, with priority given to students admitted to the Certificate in Publishing program.

PUB3000   Publishing Internship   6 ch (LE)

This two-term internship combines formal education with experiential learning and skills development at organizations with significant publishing activities. It provides unpaid work experience useful for the career and professional profile of individual students, and brings their skills and talents to local organizations involved in the publishing of books, academic journals, cultural magazines, other print materials, or digital/online content. **NOTE**: Limited enrolment. Open only to students enrolled in the Certificate in Publishing program. Students taking PUB 3000 cannot take PUB 3001 or PUB 3002. *Prerequisites*: At least 3 ch of PUB core courses and permission of the instructor.

PUB3001   Publishing Internship   3 ch (LE)

This one-term internship combines formal education with experiential learning and skills development at organizations with significant publishing activities. It provides unpaid work experience useful for the career and professional profile of individual students, and brings their skills and talents to local organizations involved in the publishing of books, academic journals, cultural magazines, other print materials, or digital/online content. **NOTE**: Limited enrolment. Open only to students enrolled in the Certificate in Publishing program. Students cannot take both PUB 3001 and PUB 3000. *Prerequisites*: At least 3 ch of PUB core courses and permission of the instructor.

PUB3002   Publishing Internship   3 ch (LE)

This one-term internship combines formal education with experiential learning and skills development at organizations with significant publishing activities. It provides unpaid work experience useful for the career and professional profile of individual students, and brings their skills and talents to local organizations involved in the publishing of books, academic journals, cultural magazines, other print materials, or digital/online content. **NOTE**: Limited enrolment. Open only to students enrolled in the Certificate in Publishing program. Students cannot take both PUB 3002 and PUB 3000. *Prerequisites*: At least 3 ch of PUB core courses and permission of the instructor.

PUB3103   Practical Editing Skills   3 ch (3C) [W]

This course focuses on the three key aspects of the editing process – acquiring, assessing, and revising written work – within a variety of publishing situations, including academic and technical writing, journalism, blogs, promotional/marketing materials,

biography/autobiography/life writing, and more. The course examines the acquisition and assessment models used by various sectors in the publishing industry, the pros and cons of peer review, and the many factors at play in the decision to acquire or accept written work. Particular attention will be paid to the various stages of revision – from initial revision to developmental/substantive editing to copyediting to proofreading as well as grammatical considerations and best practices generally regarding editing principles and processes. Students will practise working as different kinds of editors and develop skills to manage the editorial process. **NOTE:** Enrolment limited to 20, with priority given to students admitted to the Certificate in Publishing program.

PUB3104   Production & Management Fundamentals for   3 ch (3C) [W]
Print & Digital Publishing

This course will focus on some of the technical and administrative skills needed in publishing. The main focus will be on gaining some basic knowledge of software that can be used in book and magazine production (e.g., InDesign, Photoshop, OJS). But students will also learn about financial management, fulfillment and distribution, working with a printer, and the importance of marketing, promotion, and discoverability. They will look at some of the software programs (e.g., FilemakerPro, Excel) and online platforms (e.g., Instagram, Wordpress) that can be used by publishers. The course also acquaints students with some of the considerations and challenges specific to digital publishing. **NOTE**: Enrolment limited to 20, with priority given to students admitted to the Certificate in Publishing program.

RECREATION AND SPORTS STUDIES

NOTE: KIN 1001 is considered to be a prerequisite or co-requisites to all RSS and KIN courses for students enrolled in one of the degree programs offered by the Faculty of Kinesiology.

RSS1042   History of Sport and Recreation   3 ch (3C) [W]

This course is designed as an introductory examination of the historical roots of sport, recreation and human movement in western civilization. Significant events and personalities will be highlighted to provide an overview of the sub-discipline of the history of human movement phenomena. *Prerequisite:* KIN 1001 or consent of the instructor.

RSS1081   Health and Wellness   3 ch (3C)

An examination of health behaviours of individuals, encompassing social, physical, emotional, and intellectual aspects of health and wellness. The course will use health research to address health concerns, trends, risks, and repercussions associated with health decision-making. Credit cannot be received for both RSS 1081 and NURS 1225.

RSS1213   Leisure, Recreation and Sport Concepts   3 ch (3C)

This course will examine the meanings of and relationships among leisure, recreation, and sport in society. Ideas and philosophies that have shaped contemporary society related to time use, work, and associated concepts will be explored. *Prerequisite:* KIN 1001.

RSS2011   Management of Sport, Recreation and   3 ch (3C) [W]
Wellness Organizations

Introduces the students to the concepts and skills required to successfully manage current and future sport, recreation and wellness organizations in a variety of settings in the public, private, and not-for-profit sectors. Includes both theoretical and practical perspectives to help the students understand not only the WHAT and HOW of management, but also the WHY.

RSS2023   Sociology of Sport, Physical Activity & Leisure   3 ch (3C)

Explore sport, physical activity, and leisure as social phenomena and important aspects of modern society. Examine many of the same sociological issues within the framework of sport, physical activity, and leisure that exist in society as a whole. More specifically, consider the cultural aspects of sport, physical activity and leisure, how they are related to social institutions (such as education, politics, and economics) and how they affect and are affected by social inequalities. *Prerequisite:* KIN 1001 or permission of the instructor.

RSS2032   Recreation and Sport Programs and Events   3 ch (3C) [W]

Provides students with an understanding of some theoretical concepts related to programming and the techniques and procedures used to develop and implement programs and events in the recreation and sport context. Deals with the underlying principles of planning recreation programs and events and the techniques and procedures used to develop and implement these, and relates these principles to a variety of recreation settings to meet the needs of different interest levels. *Prerequisite:* RSS 1213 or permission of the instructor.

RSS2052   Foundations of Tourism (A)   3 ch (3C)

Presents both the conceptual and the operational aspects of the tourism industry from a number of points of view including motivations for travel, economic impact, product development, market analysis and future trends.

RSS2061   Recreation and Sport Delivery Systems   3 ch (3C) [W]

This course will examine the structures, processes and issues that are associated with the delivery of recreation, leisure and sport services in the public, not-for-profit, and commercial sectors. Particular attention will be paid to identifying similarities and differences among the sectors and the relationships that exist among them.

RSS2062   Psycho-Social Aspects of Leisure   3 ch (3C)

This course will examine current social psychological theory about leisure behaviour and experience. In other words, how do people's personalities and social situations that they encounter during their daily lives shape their perceptions, experiences, and responses to leisure, and how does leisure influence personality and behaviour in other life domains. This course will examine the influence of psychological and sociological impact of leisure on the individual. Specifically, this course will examine, with regard to leisure, the following areas: gender, race, violence, disability, mass media, politics, attitudes, crowd effects, youth sport, coaching leadership, and student athletes. *Prerequisite:* KIN 1001 or consent of the instructor.

RSS2223   Community Development   3 ch (3C)

Examine the nature of community and the concept and practice of community development in relation to sport and recreation behaviour and services. It reviews differing interpretations and approaches to community development and investigates current initiatives and projects that encourage citizen engagement and community mobilization. Identify potential problems and common strategies for addressing the challenges. *Prerequisite:* RSS 1213 or permission of the instructor.

RSS3001   Assessment and Evaluation in Recreation & Sport   3 ch (3C)

This course focuses on the concepts and methods relevant to the collection and analysis of data needed to address criteria and make informed decisions about the worth or improvement of systems, services, programs and facilities. Topics include understanding context, community and stakeholders, measuring user satisfaction, determining needs, attitudes, opinions and interests. Both qualitative and quantitative methods are considered and applied to actual situations. *Prerequisite:* Completion of 57 ch towards BRSS or BScKin degrees or with instructor's permission.

RSS3042   Physical Literacy and Education   3 ch (3L)

This course is designed to introduce the key components of Physical Literacy that lead to building a foundation for life long participation in sport and activity at both a recreational and high performance level. Using Fundamental Movement Skills (FMS) and Movement Education frameworks, students will gain skills and understanding on the most effective ways to develop a physically literate person. Upon completion of this course, students will be comfortable in leading and assessing FMS for people of all ages.

RSS3043   Coaching Pedagogy and Teaching   3 ch (3L)

This course is designed to provide knowledge and experience in the instruction of physical education activities that are delivered in a variety of environments. Utilizing the foundational knowledge and experience students received in RSS 3042, students will engage in the planning, delivery, and assessment of a physical education program that encourages and develops skills for life long participation and enjoyment of physical activity and sport. Upon completion of this course, students will have a level of comfort in delivering skill and age appropriate activities for youth. *Prerequisite:* RSS 3042, or permission of the instructor.

RSS3051   Advanced Management of Sport   3 ch (3C) [W]
and Recreation (A)

This course takes a critical approach to understanding management in sport and recreation through examining trends and contemporary issues in the industry. An advanced perspective of management as a complex phenomenon is employed requiring students to challenge existing management practices and seek solutions to organizational problems that are ethical, equitable and effective considering multiple stakeholders. *Prerequisites:* RSS 2011, or permission of the instructor.

RSS3052   Recreation, Sport and the Law (A)   3 ch (3C)

This course provides an introduction to the law of negligence with emphasis on professional liability and risk management, as well the course includes an introduction to criminal law and contracts. Studied through lecture, case law and selected readings all related to recreation and sport. *Prerequisite:* RSS 2011.

RSS3100   Professional Internship   12 ch [W]

Complete a full-time, unpaid, full-term placement in a professional position with a community agency. Relate theory to practice through hands-on professional career and field experiences that are reflected upon and linked with disciplinary knowledge developed in core prerequisite courses. Applied academic learning is captured and evaluated through written assignments and a presentation. *Prerequisites*: KIN 1001, KIN 2032, RSS 1042, RSS 1081, RSS 1213, RSS 2011, RSS 2023, RSS 2032, RSS 2061, RSS 2223, RSS 3001, KIN 3093. Credit cannot be received for both RSS 3103 and RSS 3100.

RSS3103   Professional Internship   3 ch [W]

Complete a full-time, full-term funded placement in a professional position with a community agency. Relate theory to practice through hands-on professional career and field experiences that are reflected upon and linked with disciplinary knowledge developed in core prerequisite courses. Applied academic learning is captured and evaluated through written assignments and a presentation. *Prerequisites*: KIN 1001, KIN 2032, RSS 1042, RSS 1081, RSS 1213, RSS 2011, RSS 2023, RSS 2032, RSS 2061, RSS 2223, RSS 3001, KIN 3093. Credit cannot be received for both RSS 3103 and RSS 3100.

RSS3213   Leisure Education and Facilitation Techniques (A)   3 ch (3C)

This course is designed to introduce students to leisure education concepts, theories, and related facilitation techniques. Various leisure education models, assessment tools, and intervention strategies will be explored. Consideration will be given to different settings in which leisure education can be implemented. *Prerequisite:* RSS 2032 or permission of instructor.

RSS3223   Youth Development through Recreation and Sport   3 ch (3C)

Understanding developmental stages of youth and the impact of recreational and sport programs and services on character, identity, self-esteem, and personal growth. Focus is on facilitating positive youth development and changes in leisure behaviour. *Prerequisite:* RSS 2032 or RSS 3213 or permission of the instructor.

RSS3911/3912/3913   Practicum I   1 ch (1L) / 2 ch (2L) / 3 ch (3L)

Relates theory to practice through professional career and field experiences. Faculty approval is required prior to any service commitment or registration procedures. *Prerequisites:* must have completed 48 ch and have an AGPA of at least 2.5.

RSS3914   Practicum II   3 ch (3L)

Relates theory to practice through professional career and field experiences. Faculty approval is required prior to any service commitment or registration procedures. *Prerequisites:* must have completed 48 ch and have a GPA of at least 2.5.

RSS4012   Recreation and Sport Facility Operations   3 ch (3C)

This course provides an overview of the organization, regulations, policies and procedures necessary to operate recreation and sport facilities in the public, private and not -for -profit sectors. It introduces options and important components of facilities from a macroscopic perspective including different levels of management, integration of operations, risk management and application of technology. This course enhances facility management skills and knowledge to support individuals working within the sport and recreation field. Students will visit a variety of facilities and experience their operations first hand.

RSS4023   Critical Perspectives on Sports/Media   3 ch (3C)

This course takes a critical media studies approach to the production and consumption of sports media. It examines the construction of narratives within and through sport in various forms of mass media, including television, radio, newspapers, the internet and film, and attempts to consider the personal, social and cultural implications of such narratives. The analysis of the sport and the media will be grounded in the context of the working world of sports journalism, consumer engagement with the sports media, and wider sociological processes such as nationalism, globalization and corporate involvement in sport. *Prerequisite:* RSS 2023 or RSS 1042.

RSS4024   Canadian History of Pucks, Parks and Playgrounds   3 ch (3C)

This course examines sport, recreation and physical cultures throughout the Canadian history, with particular focus on the period from the 19th Century onwards. Students will gain an understanding of the development and connections of sport and recreation in Canada, through diverse topics such as the playground movement, amateur and professional sport systems, the development of national and provincial parks, the institutionalization of specific sports, and the historical trajectory of physical education and fitness activities. *Prerequisite:* RSS 2023 or RSS 1042

RSS4025   Modern Olympic Studies   3 ch (3C)

In this course, the modern Olympic movement is considered in light of historical and sociological approaches. Students will study and debate major issues such as competitiveness, politics, nationalism, and commercialization, and assess the influence of significant individuals and events, both inside and outside of the Olympic movement, on the shape of the Olympic Games.

RSS4032   Event Management   3 ch (3C)

Provides senior students with a facilitated experiential learning opportunity to plan, implement and evaluate programs and events in the recreation and sport context. This course is designed to build on the foundations from prior experiences and courses. A variety of content delivery methods will be used in addition to an applied experience. *Prerequisite:* RSS 2032 or permission of the instructor.

RSS4053   Financial Management of Recreation,   3 ch (3C)
            Sport and Wellness Organizations

This course will provide students with an in-depth examination of the financial issues and challenges facing public and not-for-profit recreation sport and wellness organizations.

RSS4063   Strategies for Health Promotion   3 ch (3C)

This course examines strategies that enable people to increase control over and improve their health at the individual, community, organizational, and policy levels. It addresses health promotion principles and the change process, including needs identification, planning, and evaluation. *Prerequisites:* RSS 1081, RSS 4083, or permission of the instructor.

RSS4081   Marketing and Sponsorship in the   3 ch (3C) [W]
            Recreation and Sport Industry

This course involves the application of marketing and sponsorship concepts, theories, and strategies with regards to sport and recreation in the private, commercial, voluntary and public sectors. Marketing and sponsorship policies, strategies and tactics in terms of product, price, place, promotion, and public relations will be explored. *Prerequisite:* ADM 1313 or permission of instructor.

RSS4083   Community Health and Wellness   3 ch (3C)

An examination of community and societal factors that influence health, including: income and social status, social support networks, education and literacy, employment and working conditions, social and physical environments, health services, gender, and culture. *Prerequisite:* RSS 1081.

RSS4092   Senior Integrative Course   3 ch

This course is intended as an integrating and culminating experience for senior students in Recreation and Sport Studies. It will involve class discussions, guest speakers, case studies, etc. that will enable students to draw on their knowledge and experience to critique current issues, trends and challenges in the field. Students will be responsible for helping to identify issues to be discussed and for preparing and presenting issues in class. *Prerequisites:* 90 ch and a C or better in all required 1000 and 2000 level RSS/KIN courses. Completion of the 2-day Conference Requirement.

RSS4093   Directed Studies in Recreation and Sport Studies I   3 ch

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Recreation and Sport Studies that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BRSS degree.

RSS4094   Directed Studies in Recreation and Sport Studies II   3 ch

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Recreation and Sport Studies that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BRSS degree.

RSS4096   Selected Topics in Recreation and Sports Studies   3 ch

Selected topics of special interest in the areas of recreation and sport are examined in detail. Special emphasis will be placed on current issues. Topics of the topic will be specified by the Faculty. Title of the topic chosen will appear on the student's transcript. Faculty approval is required prior to registration. Open only to students in third year and above.

RSS4097   Selected Topics in Recreation and Sports Studies   3 ch

Selected topics of special interest in the areas of recreation and sport are examined in detail. Special emphasis will be placed on current issues. Topics will be specified by the Faculty. Title of the topic chosen will

appear on the student's transcript. Faculty approval is required prior to registration. Open only to students in third year and above.

RSS4242   **Gender, Sport and Leisure**   3 ch (3C)

This course will focus on recent theoretical and empirical research on, and the relationship among gender, sport, and leisure. Topics to be covered include an analysis of men's and women's experiences, attitudes, constraints, challenges and behaviours related to leisure and sport. Emphasis will be placed on understanding ways in which gender relations and gender role expectations affect and are affected by sport and leisure. *Prerequisite:* Must have completed 57 ch.

RSS4800   **Directed Studies in Recreation and Sports Studies**   6 ch (6C)

Guided by a faculty member, provides an opportunity foor the advanced study of theoretical concepts in a focused area in Recreation and Sport Studies that is of interest, but for which no course is offered. Faculty approval is required prior to registration. Title of the topic will appear on the student's transcript. *Prerequisite:* Completion of at least 57 ch completed towards BRSS degree.

RSS4900   **Honours Research Project**   6 ch [W]

BRSS Honours students must complete a research project under the supervision of a faculty member. The project can take the form of a thesis, report, or case study as determined by the faculty member. A presentation is required. *Prerequisite:* Students must be accepted into the BRSS Honours program (see Honours program degree requirements).

RSS4910   **Advanced Practicum**   6 ch (6C/L)

Continuation of RSS 3913/RSS 3914. *Prerequisites:* Must have completed 48 ch and have an AGPA of at least 2.5

RSS5071   **Careers and People Management in**   3 ch (3C)
           Recreation and Sport Organizations (A)

This course is an examination of potential career paths for students looking to enter into the recreation and sport field. In addition, this course provides practical components regarding Human Resource Management. Some of the topics covered include: recruitment and retention of volunteers, developing and implementing performance appraisals, understanding personalities and abilities, job design, interviewing applicants, creating reward systems, staffing, and human resource policies. *Prerequisites:* This course is primarily for grad students, but upper year undergraduate students with a 3.3 GPA or higher, and an interest in people management are encouraged to enrol.

RENAISSANCE COLLEGE

NOTE: See beginning of Section H for abbreviations, course numbers and coding.

RCLP1001   **Leadership Foundations**   3 ch (3C/S) [W]

Students are introduced to the philosophical and historical foundations of leadership theory and practice. Furthermore, they study theories and models of leadership. Finally, they explore their own, as well as others', potential to contribute to leadership processes. The course will focus on developing student skills in academic reading and writing, self-management and presentation in order to enhance their leadership abilities.

RCLP1011   **Worldviews, Religions and Cultures**   3 ch (3C/S) [W]

This course explores various religious and secular worldviews or philosophies of life, what they are, how they come to expression in our everyday actions and their formative influence on cultures, communities, individuals and particularly people in positions of leadership. To enhance knowledge of self and others, students visit sacred places, explore the worldviews of others and gain critical awareness of their own.

RCLP1020   **Canadian Internship Preparation**   0 ch (0C/S)

This non-credit interactive course is intended to prepare students for RCLP 2023 - Canadian Internship. This class takes place on an intermittent schedule throughout the fall and winter terms. A mark of CR/NCR is awarded in the second term of the first year.

RCLP1021   **Concepts of Enhancing Personal Well-Being**   3 ch (3C/S) [W]

Introduces the learner to theories and practices of developing a person's well-being. Readings, discussions and experiential learning activities focus on the physical, emotional, intellectual, social, and spiritual aspects of wellness.

RCLP1052   **Quantitative Approaches to Problem-Solving**   3 ch (3C/S) [W]

The pursuit of knowledge and basic problem-solving requires key skills in numeracy. In this course students learn how to interpret numerical data and statistics, and how to develop a quantitative assessment of strategic choices and outcomes with consideration of social economic, environmental and political forces.

RCLP1062   **Citizenship and Community**   3 ch (3C/S) [W]

An interdisciplinary examination of the social, ethical and political dimensions of citizenship. In addition to surveying the rights and duties of citizenship in a democratic society, the course reviews different forms of civic engagement in the public domain and key issues surrounding social equality and diversity among citizens. These topics are examined in the context of leadership, focusing on the critical understanding of the various roles that citizens play as members of local, national and global communities. Emphasis is placed on developing and maintaining a broad social and political awareness of the forces and events that shape these communities.

RCLP1111   **Introductory Leadership Forum**   9 ch (9C/S) [W]

Immerses students in the philosophy and learning outcomes of the BPhil program by providing them with a critical and holistic perspective on leadership and developing their essential academic skills (including information literacy, critical thinking, written and verbal communication). Foundational questions about the nature of knowledge, identity, and ethics will be examined as a means of growing students' capacities to deliberate, learn from diverse perspectives, and work with others. Students will be further introduced to critical theories and core concepts related to socially responsible leadership (such as equality, power, justice) and will engage in projects that relate these concepts to practical challenges face in contemporary communities and organizations. Emphasis is placed on teaching students how to integrate theoretical and experiential learning in their education, while growing their understanding and appreciation of interdisciplinary approaches to studying complex problems. Enrolment limited to BPhil students.

RCLP2001   **Practicing Leadership in Community Projects**   3 ch (3C/S) [W]

Students study and practice leadership in the context of diverse communities and national organizations. Initiating, planning, executing, controlling and closing a leadership project in an organization of the student's choice as well as continuous reflection on and evaluation of this project are at the core of this course. The course focuses on developing student skills in project management, communication, and cooperation.

RCLP2014   **Democracy and Public Policy in Canada**   3 ch (3C/S) [W]

The course explores the different roles that government, law and civil society play in addressing significant social and political problems in Canada. By focusing on a specific current public policy issue, students will examine the interplay between institutions, groups and norms, and develop a critical perspective on democratic life in Canada.

RCLP2020   **Formative Learning Portfolio II**   2 ch (2C/S) [W]

Portfolio II enhances students understanding and use of learning portfolios as they apply self-analysis to their growth and competency in each of the six Renaissance College Learning Outcomes relative to their developing understanding of leadership. Students create formative learning portfolios using evidence from their RC courses, disciplinary minor, extracurricular activities, Canadian internship, and their informal learning activities. RC faculty members assess portfolios and a mark of CR/NCR is awarded in the second term of the second year. *Prerequisite:* RCLP 1010.

RCLP2023   **Canadian Internship**   12 ch [W]

A full-time 12 to 16 week placement in an organization located in Canada where students observe leadership in action, develop their leadership skills, and test their interest and aptitude for a career. With guidance from a mentor at UNB and in the organization, students complete assignments designed to enable them to apply their academic knowledge and critical thinking skills in a work environment while enhancing their professional development. A presentation during the subsequent fall term concludes the internship. *Prerequisite:* RCLP 1001, RCLP 1010, RCLP 1011, RCLP 1021, RCLP 1052, RCLP 1062, RCLP 1111, RCLP 1112, or permission of the instructor.

RCLP2042   **Science and Society**   3 ch

This course introduces students to basic precepts of scientific knowledge and thinking and assessed how the scientific worldview has revolutionized our lives individually and collectively on a global scale. Via an interdisciplinary approach it explores topics such as the implications of the a scientific worldview, scientific knowledge, and literacy, science and religion, Indigenous knowledge systems and modern science, technology and ethical dilemmas, science and environment, and science, and the future.

RCLP2046   **International Internship Preparation**   0 ch (0C/S)

This non-credit interactive course is intended to prepare students for RCLP 3046 - International Internship. This course is offered on an intermittent schedule throughout the fall and winter term. A mark of CR/NCR is awarded in the second term of the second year.

RCLP2051   **Research Paradigms and Methods**   3 ch (3C/S) [W]

Provides students with the conceptual foundation to understand a broad variety of research paradigms and methods, including the respective epistemologies, values, and ethical considerations embedded within them. It will familiarize students with some key methodologies and tools applied within various traditions, including, but not limited to, community-based research approaches and emerging indigenous research paradigms.

RCLP3002   **Leadership in Cross-Cultural Contexts**   3 ch (3C/S) [W]

Students study leadership in global and cross-cultural contexts. They engage in cross-cultural projects and study and reflect on the impact of cultural differences and diversity on leadership processes. The course focuses on developing skills in cross-cultural communication and cooperation.

RCLP3015   **Democracy and Global Policy**   3 ch (3C/S) [W]

This course explores the different role that states, international organizations and civil society play in addressing global social problems. By examining a current global governance issue, students will be introduced to the key institutional and economic features of the international order. They will evaluate opportunities for collective action and develop a critical perspective on systematic challenges to global cooperation.

RCLP3030   **Integrated Learning Portfolio**   3 ch [W]

In this online courses students learn how to construct personal learning portfolios to demonstrate achievement in each of the BIS program's articulated learning outcomes. Students are introduced to the learning outcomes, the theory and practice of experiential learning, and reflective writing, as they work toward constructing personal learning portfolio.

RCLP3031   **Applied Leadership Project**   3 ch [W]

In this online course, students are introduced to the framework for an applied leadership project. Students identify an exsisting leadership challenge within an organization of their choice, research and assess exsisting approaches for addressing the challenge, and create a project report detailing the results, including applicable recommendations.

RCLP3046   **International Internship**   12 ch [W]

This is a cross-cultural educational experience where students travel in small teams to countries where the culture differs from theirs. For a minimum of 10 weeks they immerse themselves in the communities and complete full-time placements with local non-profit organizations. Students contribute to community efforts in order to: observe and learn with and from local people and communities; appreciate multiple perspectives on issues; understand how others experience situations and decisions; and, evaluate how leadership functions in other cultures and societies. A rigorous preparation and re-entry process as well as a set of assignments help students go through a structured process of inquiry and reflection to build knowledge through experience. A presentation during the subsequent fall term concludes the internship. *Prerequisites*: RCLP 2023, RCLP 2046, and RCLP 3002, or permission of the instructor.

RCLP3051   **Essential Skills for Leadership (O)**   3 ch (3C/S)

This course explores the roles, responsibilities and challenges involved in effective leadership in both community organizations and workplace settings. Emphasis is placed on experiential learning activites designed to develop leadership skills, including effective communication, team-building strategies, conflict management and strategic planning.

RCLP3053   **Gender and Leadership (O)**   3 ch (3C/S) [W]

An interdisciplinary examination of the impact that gender has on people's experience and success in leadership roles, and on the ideal of good leadership itself. This course will explore the causes of unequal representation in positions of power in business organizations and in politics, and it will consider possible ways to close the gender gaps. Other topics examined will include: leadership and the public vs. private dichotomy; masculinity and the leadership ideal; gendered division of labor, gendered barriers to leadership in politics, corporate structures and other organizations.

RCLP3054   **Mindfulness (O)**   3 ch (3C/S) [W]

Mindfulness training cultivates the innate ability to be present; develops calm, concentration, insight and fosters personal growth. Students will examine the theory of mindfulness and engage experientially in a range of practices. They will become increasingly familiar with wisdom of their own minds and bodies, the larger environment in which they live, and the ways mindful leadership may be applied and integrated into their daily, academic and professional lives.

RCLP3701   **Special Topics in Leadership**   3 ch

An in-depth examination of a specific leadership topic. Each topic will be given an appropriate title that will appear on the student's transcripts. Each course will also help students develop competence in one or more of the Renaissance College Learning outcomes. Students may take more than one topic for credit.

RCLP4001   Directed Studies in Interdisciplinary Leadership (O)   3 ch [W]

Individualized study of a topic of interest to the student developed in consultation with a faculty member and with approval of the Dean. This course engages students in applied or basic research activities.

RCLP4002   **Leadership for Social innovation (O)**   3 ch (3C/S) [W]

This course focuses on social innovation from a leadership perspective. With emphasis on self-directed learning, students apply innovative approaches to exploring social problems and their potential solutions in the context of several case studies. Students will develop their understanding of and competencies within topic areas such as: frameworks for social innovation and social entrepreneurship; social value proposition; change leadership frameworks and change management; organizational alternatives; lean canvas methodology; business planning; design thinking; critical perspectives and impact assessment.

RCLP4003   **Leadership and Foresight (O)**   3 ch [W]

This course draws from the interdisciplinary fields of leadership and futures studies. Students explore diverse futures in the context of various leaderhip challenges and different approaches for how organizations, institutions, society, and individuals can prepare for them. In particular, students study and apply tools and techniques of strategic foresight that help them understand, conceptualize, and communicate alternative viewpoints of the future.

RCLP4011   **Worldviews and Leadership (O)**   3 ch (3C/S) [W]

This course investigates the relationship between worldviews and leadership. It explores a number of prominent leaders, and the beliefs, values and visions that enacted change in to the world past and present and can lead to change for the future. This course promotes active learning, and encouraging students to develop and articulate beliefs, values and visions for their leadership.

RCLP4028   **Community Problem-Solving and**   6 ch (6C/S) [W]
                      Research Project

Students and faculty collaborate with government agencies and community-based organizations on joint problem-solving in a project-based environment. This two-term course helps students to utilize the knowledge and skills acquired in their previous learning a well as their critical thinking and research skills. Further, students develop confidence as change-makers while also exploring innovative ideas for pressing social, environmental and economic challenges.

RCLP4031   **Images and Insight (O)**   3 ch (3C/S) [W]

Questions surrounding how images educate, how they make visible emotional and intellectual content, the effects of the visual on human beings, and the visual as an interdisciplinary approach provide a philosophical basis from which the relationship of visual literacy to leadership is explored and developed. There may be a nominal studio fee associated with this course.

RCLP4040   **Summative Learning Portfolio III (O)**   2 ch (2C/S) [W]

For this course, students submit a summative learning portfolio to demonstrate their growth and competency in the RC Learning Outcomes and connect this with their long range career and life plans. Final presentations highlight their learning using all course work and other experiences including the Canadian and international internship programs. RC faculty members assess the Final Summative Portfolios and a mark of CR/NCR is awarded in the second term of the third year. *Prerequisite:* RCLP 2020.

RCLP4043   **Interdisciplinary Leadership Seminar**   3 ch (3C/S) [W]

This capstone course brings together the three key areas of interdisciplinary studies at Renaissance College leadership theory and practice, worldviews, and public policy. It engages students in further development of their knowledge and understanding of how these three interwoven areas related to exercising leadership on local, national, and global issues. The course is normally reserved for students in the final year of their BPhil studies, and serves as prerequisite for RCLP 1045 Learning Portfolio; open to other students with permission of the instructor.

RCLP4045   **Learning Portfolio**   3 ch (3C/S) [W]

This course prepares students to create a summative portfolio that demonstrates their learning in regard to RC Learning Outcomes. The

portfolio will reflect their learning from course work, including internships, and relevant extra-curricular activities. *Prerequisites:* RCLP 4043.

RCLP4997   **Leadership Practicum (O)**   **1, 2 or 3 ch**

The opportunity to gain leadership skills, training and experience through significant involvement in leading, directing, coaching and/or managing groups or individuals in the community or on campus. Each credit hour requires at least 40 hours of leadership and learning activities. Students must receive Dean's approval.

RUSSIAN

NOTE: See beginning of Section H for abbreviations, course numbers and coding.
For a description of an interdisciplinary major/minor program in Russian and Eurasian Studies see the "Russian and Eurasian Studies" section found in the Faculty of Arts program information contained in Section G of this calendar.

RUSS1013   **Introductory Russian I**   **3 ch**

Closed to students with any knowledge of Russian. Sound system of Russian and elementary structures. Emphasis on the four basic skills of listening, speaking, reading, and writing. *Prerequisite:* No prerequisite.

RUSS1023   **Introductory Russian II**   **3 ch**

Continuation of RUSS 1013. *Prerequisite:* RUSS 1013.

RUSS1043   **Russian Culture I**   **3 ch (3C) [W]**

Significant aspects of Russian culture from the 10th to the end of the 19th century. Topics include Russian Icon Painting and Architecture, Russian culture between Europe and Asia; Ivan the Terrible as cultural type; women in Russian culture; serfdom and slavery; Russia's contribution to the development of terrorism and revolution; the reforms of Peter the Great; Russian Orthodoxy, etc. Conducted in English. Open to students of all years.

RUSS1053   **Russian Culture II**   **3 ch (3C) [W]**

Significant aspects of Russian and Soviet culture in the 20th century. Topics include Russian avant garde painting; the Bolshevik Revolution and apocalyptism; class and corruption; Socialist Realism; Stalin and Stalinism; women's roles under the Soviets; Eisenstein and Soviet cinema; the artificial famine and the Gulag; literature and censorship; Soviet sport and society; Glasnost and culture; etc. Conducted in English. Open to students of all years. No *Prerequisites*.

RUSS2013   **Intermediate Russian I**   **3 ch**

More complex grammatical structures and more advanced texts. *Prerequisite:* RUSS 1023.

RUSS2023   **Intermediate Russian II**   **3 ch**

Continuation of RUSS 2013. *Prerequisite:* RUSS 2013.

RUSS3013   **Advanced Russian I**   **3 ch**

Through the study of advanced grammar, oral discussion of contemporary topics and written assignments, the students' competence in Russian is improved and their skills in idiomatic and written usage are developed. *Prerequisite:* RUSS 2023 or equivalent. Offered in alternate years.

RUSS3023   **Advanced Russian II**   **3 ch**

Continuation of RUSS 3013. *Prerequisite:* RUSS 3013 or equivalent. Offered in alternate years.

RUSS3051   **Introduction to 19th-Century Russian**   **3 ch (3C) [W]**
     Literature in Translation (Cross-Listed: WLCS 3051)

Includes the Golden Age of Russian Literature (Pushkin, Lermontov); the great realists (Dostoevsky, Tolstoy, Turgenev); and the emergence of Russian Drama (Chekhov). Themes followed include the superfluous man; nihilism and politics in literature; the Russian female protagonist from Karamzin's Poor Liza to Dostoevsky's prostitute Sonya; etc. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor.

RUSS3052   **Introduction to 20th Century Russian**   **3 ch (3C) [W]**
     Literature in Translation

Includes Futurism, Symbolism, Acmeism and Russia's Silver Age; literature and Revolution; housing and homelessness in Soviet literature; women's writing; Socialist realism (boy meets girl, boy gets tractor); censorship and oppression; experimental prose of the '20s; aspects of Soviet cinema; Russia's 'New Wave' meets America's Beatniks; Bulgakov's magical fable; etc. Conducted in English. Open to students who have completed at least 30 ch of university courses or by permission of instructor.

RUSS3083   **Seminar I: Genre**   **3 ch [W]**

The development of a particular genre in Russian literature and an examination of various works in that area. *Prerequisite:* Departmental approval.

RUSS4003   **Topics in Russian and Eurasian Studies**   **3 ch**

Allows students to pursue special questions in an area of Russian and Eurasian Studies of particular interest to them.

RUSS4043   **Literature and Religion in 19th and**   **3 ch (3C) [W]**
     20th Century Russia and Spain (O)

Studies religious works of Spanish and Russian writers such as Unamuno and Tolstoy. Examines their religious thought and their criticism of the established Spanish Roman Catholic Church and Russian Orthodox Church respectively. Outlines the situation of the Eastern Orthodox Church in Russia as well as the situation of the Catholic Church in Spain in the 19th and the 20th Centuries. Analyzes the position of these writers towards their respective Churches and the creation of their own moral codes through the textual analysis of some of their most relevant works. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at university level. Students who take this course to fulfill a Major or Honours requirement in Spanish will submit a required work in Spanish.

RUSS4053   **Seminar II: Author**   **3 ch [W]**

An intensive study of the life and work of a particular author or a number of authors. *Prerequisite:* Departmental approval.

RUSS4061   **Russian Women Writers**   **3 ch (3C) [W]**

Despite their enormous contributions at many historical points, women writers still struggle for full acceptance in the Russian literary canon, witness special sections even today in most Russian bookstores for "Feminine Literature". This course will examine the work of a range of better and lesser known Russian women writers from the late 18th to the early 21st centuries, in poetry, prose, drama and memoir. Writers to be studied include Catherine the Great, the "Russian Amazon", Nadezhda Durova a cross-dressing cavalry maiden during the Napoleonic campaign, the giants of the Silver Age Anna Akhmatova and Marina Tsvetaeva, ostensible socialist-realists like Vera Panova, Natalia Baranskaia and I. Grekova, dissident figures such as Evgeniia Ginzburg and Natalia Gorbanevskaia, and older and younger contemporary writers such as Ludmila Petrushevskaia, Tatiana Tolstaia, and Marina Palei. Works and authors will be studied in historical and cultural context, and connections to other arts, in particular visual arts, film and popular music will also be explored. The course and all readings are in English. Open to students who have completed at least 30 ch of university courses or by permission of the instructor. Students with credit for RSST 4003 Russian Women Writers may not take this course for credit.

SCIENCE

NOTE: See beginning of Section H for abbreviations, course numbers and coding.

SCI1001   **Professional Skills for Science Students**   **1 ch (1C, 0.5L)**

This course is designed for entering Science students to equip them with the skills to help master first year University.

SCI1002   **Science in Context**   **1 ch (1C, 0.5L)**

This course is designed for entering Science students to develop career skills in science. Topics include library research skills, lab report writing, teamwork skills, identifying junk science, ethics in science, as well as exploring career & degree options.

SCI2003   **Work Integrated Learning Report I**   **CR [W]**

A written and oral report on the scientific activities of the Work Integrated Learning (WIL) experience. Faculty approval is required prior to any placement. A component of the grade will be the supervisor's evaluation of the student. *Prerequisite*: Students must have completed 32 ch and have a GPA of 2.7 or better.

SCI2611   **Life Science For Educators (Grades K-6)**   **3 ch (3C 3L)**

This course is designed for undergraduates preparing for entrance to an elementary teacher education program. It is an introductory level course for students having a limited science background. The topics selected are based on the Atlantic Provinces Science Curriculum, 1995. Included are: properties of living things, life processes and organization of living things, populations, energy flow and cycles within systems, the earth and its atmosphere. This course is not open to science majors.

SCI2622   **Physical Science for Educators (Grades K-8)**   **3 ch (3C 3L)**

This course is designed for undergraduate preparing for entrance to an elementary teacher education program. It is an introductory level course for students having limited science background. Demonstrations, activities

and labs will be integrated into the lectures. The topics selected are based on the Atlantic Provinces Science Curriculum, 1995. These include topics in chemistry and physics for the grades K-8 science curriculum. This course is not open to science majors.

SCI4999 Interconnections in Environmental Sciences 3 ch (C/S) (LE) [W]

Capstone course for Environmental Sciences students. Using an evidence-based approach, students will reconcile scientific, economic, ethical and social perspectives on a contemporary environmental issue. The course may consist of invited seminars, panel discussions, group work, and written and oral reports. Groups will include students from different specializations. Typically taken in the final year of study. *Prerequisite:* final year of study or approval of the instructor.

SCICOOP   Co-op Work Term

This designation indicates a Science Co-op work term.

SOCIOLOGY

See beginning of Section H for abbreviations, course numbers and coding.

SOCI1503   Sociological Perspectives   3 ch [W]

Introduces the basic concepts, theories, perspectives, and approaches of sociology and their application to the study of society and the relationship between the individual and society. Specific topics used to illustrate these sociological perspectives will include some combination of issues concerning socialization, sex and gender, family, community, population and aging, urban life, religion, race and ethnicity, work and occupations, inequality, education, environment, globalization, politics and social movements, technology and social change.

SOCI1513   Picturing Society: Image, Meaning, and   3 ch [W]
Memory in the Photographic Era

How do photographs affect the way we think of ourselves (e.g., our body image) and of others (e.g., the "primitives" pictured in National Geographic)? How do photographs create desire (e.g., in advertising and pornography)? Why do people take photographs of friends and family but rarely photograph complete strangers? These questions explore the nature of a "picturing society", one where individuals are surrounded by photographic images and, as a result, the ability to capture realistic representations of the world around us influences image, meaning, and memory. The term "picturing society" also refers to the process of using visual information to understand the characteristics of society - social class and gender divisions, social structure, the process of social change, etc. Photographs from a wide variety of contexts - personal, commercial, scientific, artistic, and others - will be used to explore these aspects of picturing society.

SOCI1523   Youth Culture and Society   3 ch

Provides an introduction to the sociological imagination by highlighting the sociological connections between an individual's personal world and the social world. Sociological perspectives and approaches are introduced through examination of such aspects of youth in contemporary Western societies as identity and sub-cultures, sexual behaviour, music, consumerism, religion, in schools, employment, crime and violence, and other issues affecting youth and their transitions to adulthood.

SOCI1543   Men and Women - Then and Now   3 ch [W]

Life is gendered from the moment of birth. Throughout the various developmental stages, girls and boys are exposed to a variety of messages that in some ways are represented by the fairy tales read in childhood. Adolescents learn the price of deviating too far from the roles or expectations placed upon young men and women in our culture through formal and informal sanctions upon their behaviour. The choices, opportunities, and obstacles that we face as adults, are in large measure built upon the gender messages of childhood. Strategies for identifying the gendered nature of work, leisure, advertising, parenting, and aging will be amongst the topics discussed.

SOCI1564   Social Determinates of Health   3 ch

Introduces the relationship between social equality and health, the socioeconomic gradient in health outcomes, and the structural and social forces that predispose individuals to ill health and disease. Topics include gender and health, racialization and health, housing and health, employment and health, disability and health, environment and health, and stigmatization and health.

SOCI1593   Hooked on Religion   3 ch [W]

Whether it is a prayer said in times of sorrow, grace at a meal, a religious ritual to celebrate adolescence, fasting, advice from a faith leader, or a spiritual blessing for a long-term intimate relationship, contact with religion comes in many different forms. Some Canadians "believe without belonging" while others belong to religious organizations but are unsure of

their beliefs. Topics include patterns of spirituality in Canadian society, new religious movements, gender and family issues within contemporary religions, violence, and the impact of immigration and multiculturalism on the journey of faith. The impact of changing socio-cultural conditions on religion in Canadian society will be highlighted.

SOCI1603 Introduction to Criminology (Cross-Listed: CRIM 1603) 3 ch [W]

Explores the subject matter of criminology and its relationship to other academic disciplines. Examines different concepts and terms commonly used in criminology, the specificity of criminology, relationship between theory and practice, the history and evolution of criminological thought, and the methods of investigation into criminal behaviour. The practical applications of criminology and the foundations of a modern criminal justice policy is also discussed. **NOTE:** Credit can be obtained for only *one* of CRIM 1603, SOCI 1603 and SOCI 3603.

SOCI2001   Introduction to Family Violence Issues   3 ch
(Cross-Listed: FVI 2001)

Introduces current theories, research and practice in family violence issues. Topics include: themes of violence; dynamics of violence; gender relations; attitudes, myths, and realities surrounding family violence; public versus private nature of family violence. Research from various perspectives is evaluated. **NOTE:** Credit can only be obtained for one of FVI 2001 or SOCI 2001.

SOCI2003 Interpersonal Cyberviolence (Cross-Listed: FVI 2003) 3 ch [W]

Examines issues associated with the crimes that fall under the umbrella of cyberviolence and online intervention strategies. Considers relevant theories, existing research, and student experiences of online communication. Highlights that cyberviolence is a growing means of perpetrating interpersonal gender-based violence. **NOTE:** Credit can only be obtained for *one* of FVI 2003 and SOCI 2003.

SOCI2015 Introduction to the Canadian Criminal Justice System 3 ch [W]
(Cross-Listed: CRIM 2015)

Introduces the Canadian Criminal Justice System (CCJS). The CCJS is comprised of various organizations of the federal, provincial, and municipal governments that respond to crime. Follows the accused through the various instances within the CCJS: police, courts, prosecution, sentencing, and corrections. Examines how the CCJS operates in the Canadian context and the larger functions it serves. The overall objective is to understand the role played by CCJS in Canada and develop a critical analysis of responses to crime. **NOTE:** Credit can be obtained for only *one* of CRIM 2015 and SOCI 2015.

SOCI2022   Introduction to Data in the Social Sciences   3 ch [W]

This course is open to students from all faculties and disciplines who are interested in learning the very basic and techniques of understanding, analysing, and reporting data in the social sciences. This course is equally divided between qualitative and quantitative approaches to different types of social science data. **NOTE:** This course is not equivalent to SOCI 3103 Research Design or STAT 2263 Statistics for Non-Science Majors.

SOCI2223   Introduction to Mass Communications and the Media   3 ch

A critical overview of mass communications within Canadian society: media institutions and audiences; processes and the impact of the media; media control and policy; social problems and the media; and social issues in an information society.

SOCI2303   Sociology of Families   3 ch [W]

Examines sociological perspectives on marriage and family life: changing forms and functions of the family in the context of the growth of capitalism and industrialism in Western society, women, liberation and the family, patterns and ideologies of family formation and dissolution, changes in family law, and future prospects and alternatives.

SOCI2313   Sociology of Women   3 ch

Focuses on the role of women within a historical and contemporary context, including women's position in the family, and in educational, political, and economic institutions. The nature, perpetuation, consequences, and the ideology of sexism in capitalist and non-capitalist societies will also be examined.

SOCI2345   Sociology of Aging   3 ch [W]

An introduction to the basic physical, psychological, and demographic changes which occur in aging. Emphasis is given to understanding the everyday world of the young old, their participation in family life, personal life style and community activities after retirement, and with the restrictions created by limited financial resources.

SOCI2365   Sociology of Dying and Death   3 ch [W]

Explores how personal experiences with dying and death are shaped by societal, cultural, and institutional expectations. Students develop skills in

critically analyzing theoretical and methodological issues to provide insights on how attitudes towards dying and death are influenced by social organizations, demography of death, care systems, and socialization at various stages of life.

SOCI2375   **Sociology of Health and Illness**   **3 ch [W]**

Examines the social nature and consequences of health and illness and looks at medicine as an institution of social control. The course covers topics such as models of health, the social production of disease, stigma and chronic illness/disability; the pharmaceutical industry; as well as racism, gender, and gender and health.

SOCI2403   **Contemporary Canadian Issues**   **3 ch**

An introduction to current social issues in Canada such as social inequality, regionalism, unemployment, media concentration, the role of multinationals, and the state of the Canadian economy. The impact of these in shaping our everyday actions and beliefs will be examined.

SOCI2433   **Social Problems**   **3 ch [W]**

This course is designed to provide students with an opportunity to develop an understanding of various sociological approaches to the study of social problems and to focus on a selection of substantive issues such as the role of social movements in the construction of social problems.

SOCI2503   **Social Movements and Social Revolutions**   **3 ch [W]**

An analysis of twentieth century social movements and revolutions from a sociological perspective. Emphasis is on a critical understanding of why they arise, why some fail, and why others succeed.

SOCI2533   **Information Society**   **3 ch [W]**

Investigates 'the information society' debate by focusing on the major contributors who argue that the information society is new and revolutionary. Other scholars accept the important role of information technologies in contemporary society but maintain that these technologies help broaden and extend existing social, cultural, economic, and political relations.

SOCI2534   **Technology and Social Change**   **3 ch [W]**

Examines the relationship between technology and social change, such as the sources and effects of technical change, the control of technology, and the origin and nature of controversies involving modern technologies.

SOCI2563   **Violence and Society (Cross-Listed: CRIM 2563)**   **3 ch [W]**

Introduces a broad range of violent crimes from sociological perspectives. Includes a survey of political violence such as genocide, the holocaust, state and anti-state terrorism; analysis of hate crimes and various types of homicide such as serial murder, mass murder, and thrill killings; examination of various manifestations of violence against women such as mass and date rape; exploration of kinds of assault such as physical assault, spousal battery, and child abuse; and robbery. **NOTE**: Credit can only be obtained for *one* of SOCI 1563, CRIM 2563, and SOCI 2563.

SOCI2573   **Social Networks (Cross-Listed: CRIM 2573)**   **3 ch [W]**

Provides a conceptual introduction to the theories and methods related to the social scientific study of networks through an in-depth examination of application(s) and insights related to issues such as health, crime/deviance, online social networks, corporations, social movements, terrorism, social support, and more. Social Network analysis is a research method that allows social scientists to understand patterns of relations between various actors and organizations. Using both qualitative and quantitative data, social network analysis examines relations, interactions, roles, and affiliations that influence the structure of organizations and behaviours of individuals using diverse methodologies. **NOTE**: Credit can only be obtained for *one* of CRIM 2573 and SOCI 2573.

SOCI2575   **Terrorism (Cross-Listed: CRIM 2575)**   **3 ch [W]**

Introduces the social-scientific study of terrorism, examining the theories, social dynamics, and historical contexts related to politically and ideologically inspired violence. **NOTE**: Credit can only be obtained for *one* of CRIM 2575 and SOCI 2575.

SOCI2603 **Sociology of Deviance (Cross-Listed: CRIM 2603)** **3 ch [W]**

Examines the elements and patterns of deviance, basic principles of both normative and deviant behaviour, and the institutionalization of each. Examples of specific areas and types of deviance are studied in some detail. **NOTE**: Credit can only be obtained for *one* of CRIM 2603 and SOCI 2603.

SOCI2613   **Youth Justice (Cross-Listed: CRIM 2613)**   **3 ch [W]**

Examines the history of juvenile delinquency, its incidence, its causes, and the methods of investigation. Deals with agencies involved in the adjudication and treatment of juvenile and youthful offenders. **NOTE**: Credit can only be obtained for *one* of CRIM 2613 and SOCI 2613.

SOCI2663   **Social Perspectives on Victimology**   **3 ch [W]**
                     (Cross-Listed: CRIM 2663)

Provides an opportunity to explore different forms of victimization in the Canadian context, examines various groups of victims and vulnerable populations, and define who victims are. Explores victimization by the criminal justice system, which includes reporting to the police, the investigation, the court process, etc. Focuses on various types of victims in society, such as Indigenous peoples of Canada and vulnerable populations. **NOTE**: Credit can only be obtained for *one* of SOCI 2663 and CRIM 2663.

SOCI2703   **Introduction to Population Health**   **3 ch [W]**

Explores the basics of demographic trends for understanding patterns and causes of health and disease in different populations. Students apply this knowledge to analyze policy options to improve the health of populations.

SOCI2801   **Food and Culture (Cross-Listed: ANTH 2801)**   **3 ch (3C)**

Introduces theories and methods in the growing field of food studies. Few things are more important to human beings than food. Food is profoundly cultural, which makes it a topic of interest to social scientists concerned with the comparative study of culture and society across time and space. On the one hand, what is considered edible, what is seen as good to eat, and how it all embeds in changing ways of life all varies depending on cultural, social, economic, and political contexts. On the other hand, thinking about nutrition, energy, diet, and what is left behind opens a valuable window on societies past and present. The course goal is a practical guide to the study of food, its core ideas, and its methodologies, with the goal of bringing order and insight to diverse relationships between people and what they eat. **NOTE**: Credit can only be obtained for *one* of ANTH 2801 and SOCI 2801.

SOCI3004   **Theoretical Foundations of Sociology**   **3 ch [W]**

A critical review of the first and second generations of sociology in Europe and the United States, with special emphasis upon the ideas of thinkers such as Comte, Spencer, Marx, Weber, Durkheim, Mead, Cooley, Merton, and Parsons.

SOCI3006   **Intervention Strategies and Programs for**   **3 ch [W]**
                     People who Batter (Cross-Listed: FVI 3006)

This course will examine the major theories related to violence in intimate relationships and explore the different intervention strategies and programs which have evolved from these theories. Credit cannot be obtained for both FVI 3006 and SOCI 3006.

SOCI3007   **Religion and Family Violence**   **3 ch [W]**
                     (Cross-Listed: FVI 3007)

This course examines issues pertaining to violence in religious families and the role of faith communities (and their leaders) in responding to violence in the family context. It will consider relevant data, theories, and strategies for change. Normally taught online. Credit may be granted for only one of FVI 3007 or SOCI 3007.

SOCI3014   **Major Developments in Contemporary**   **3 ch [W]**
                     Sociological Theory

An overview of major developments in late 20th century sociological theory: the critique of functionalism and the rise of conflict theory; feminism and the critique of male-stream sociology; the revitalization of interpretive sociology; the emergence of neo-functionalism; and the debate over post-modernism. *Prerequisite:* SOCI 3004.

SOCI3103   **Research Design**   **3 ch**

Provides students with the skills to design a variety of research projects. The focus is on components that make up a research project including access to data sets, recruitment of research participants, choosing methods of data analysis, and research ethics review. **NOTE:** This course is not equivalent to SOCI 2022 Introduction to Data in the Social Sciences.

SOCI3115   **What Works? Introduction to Program Evaluation**   **3 ch**

Approaches the formative, process and outcome evaluation of programs, and initiatives. Emphasis is on the development, design, practical and ethical problems and politics of evaluation research. **NOTE:** Students who received credit for SOCI 4115 may not receive credit for SOCI 3115.

SOCI3223   **Ethnic Relations in Canada**   **3 ch**

Examines the interactional and institutional processes involved in ethnic and intercultural relations. Focuses on group experience, status and identity, communication and language, and the historical and contemporary conditions of social change, tension, and conflict.

SOCI3243　　　　　**Sociology of Culture**　　　　　**3 ch**

Studies cultures as ideas and value systems. Examines how cultural meanings are interpreted and used by individuals and groups in the course of everyday living.

SOCI3253　　　　　**Sociology of Media**　　　　　**3 ch**

Examines the place of media (such as film, television, and newspapers) in contemporary social life. Analyzes how media have emerged and developed, the organizational forms they have taken, and how they reflect and influence shared social experience.

SOCI3312　　**Political Sociology (Cross-Listed: POLS 3312)**　　**3 ch**

Examines the relations between society and the state by comparing traditional political sociology with the contemporary approach. Issues include the nation state as the center of political activity, how power is exercised through institutions, social groups, class, the production of identity or subjectivity, how globalization and social movements decenter state political activity, the impact of these changes on citizenship and democracy.

SOCI3335　　　　**Religion, Gender and Society**　　　　**3 ch [W]**

An examination of the relationship between religion and gender in various interpersonal and societal contexts. Emphasis is placed upon understanding how modern religion both contributes to and challenges traditional notions of masculinity and femininity.

SOCI3364　　　　**Chronic Illness and Disability**　　　　**3 ch**

Provides students with a sociological understanding of the lived experience of chronic illness and disability. Issues and challenges related to living with chronic illness and disability in the contexts of the family, education, and the workplace are examined through the lens of key concepts and models of chronic illness and disability.

SOCI3371　　　　**The Institution of Health Care**　　　　**3 ch [W]**

Examines the institution of health care with particular emphasis on the Canadian health care system. Topics covered include theoretical approaches to the sociological study of health care; the history and development of Canada's Medicare system; the pharmaceutical industry; alternative/complementary health care; the socialization and legitimation of health care professionals; and the patient/practitioner relationship.

SOCI3373　　**Sociology of Science and Technology**　　**3 ch [W]**

This course explores the complex interactions among science and technology in contemporary society.

SOCI3385　　　**Sociology of Policing and Security**　　　**3 ch [W]**
　　　　　　　　　(Cross-Listed: CRIM 3385)

Approaches the field of policing and security studies from a critical interdisciplinary perspective. Examines key theoretical perspectives and debates about policing and security and their roles in shaping social, political, and economic relations. Surveys the historical emergence, organization, and practices of the police institution in the context of nation-state formation and interlocking systems of capitalism, colonialism, patriarchy, and racism. **NOTE:** Credit can only be obtained for *one* of SOCI 3385 and CRIM 3385.

SOCI3403　　　　　**Individual and Society**　　　　　**3 ch**

Examines social interaction and communication in society as it occurs in social encounters and gatherings. Explores the presentation and projection of self in everyday life.

SOCI3523　　**Sociology of International Development**　　**3 ch [W]**

Examines the process of social transformation to promote development. Learn of the ties between countries at different stages of development, patterns of industrialization, urbanization, and changing class structure including its relation to the state.

SOCI3533　　　　　**Social Inequality**　　　　　**3 ch [W]**

Examines the nature of social stratification from both a historical and a comparative perspective. Attention is given to current controversies in this area.

SOCI3543　　　　**Sociology of Gender Relations**　　　　**3 ch [W]**

Examines the social construction of masculinity, femininity, and changes in gender relations over time and in different societal contexts.

SOCI3553　　　**Sociology and the Environment**　　　**3 ch [W]**

A sociological examination of the way humans perceive and relate to their physical environment. Potential topics include: environmentalism as a social movement, the social dynamics of environmental controversies, and public policy toward the environment.

SOCI3563　　**Global Perspectives in Environmental Health**　　**3 ch [W]**

Explores the broad conditions that shape environmental health, with special emphasis on both sociological analysis and political ecology. We will examine questions of science, public policy and social justice. This course will bridge the gap in understanding between policy and social perspectives and examine emerging strategies, from community-based monitoring to international negotiations concerning health and environment.

SOCI3605　　　　**International Human Rights**　　　　**3 ch [W]**

Explores the theory, politics, and practice of international human rights. Examines power structures and the policies and practices of state and non-state actors in the international arena. Some of the issues discussed include the effects of globalization on human rights, the threats of genocide and torture, human trafficking, racism, environmental human rights, women's and Indigenous peoples' human rights, and the human rights to food, health, and peace.

SOCI3613　　**Theories and Perspectives in Criminology**　　**3 ch**
　　　　　　　　　(Cross-Listed: CRIM 3613)

Examines the historical development of criminological theory and the causes of crime. Deals with criminal causation theories and with an evaluation of the theories and purposes of punishment. **NOTE:** Credit can only be obtained for *one* of SOCI 3613 and CRIM 3613. Students who have completed SOCI 3610 or its equivalent may not receive credit for SOCI 3613.

SOCI3623　　**White Collar Crime (Cross-Listed: CRIM 3623)**　　**3 ch**

Provides an analysis of the organized abuses of institutionalized power, particularly on the part of corporations and governments. The problem of controlling corporate and governmental deviance is also discussed, as organizations pose prevention and control problems which are different from those involvinig individual deviants. **NOTE:** Credit can only be obtained for *one* of SOCI 3623 and CRIM 3623.

SOCI3634　　　　**Violence Against Women**　　　　**3 ch**
　　　　　　(Cross-Listed: FVI 3634 and CRIM 3634)

Examines issues pertaining to violence against women in Western society, including gender socialization, gender dynamics in dating and family relationships, private versus public, the contributions of social institutions (e.g., sports, the media, schools, the workplace, the military, the medical system, and the legal and criminal justice systems), and the special vulnerability of women in marginalized groups. **NOTE:** Credit can only be obtained for *one* of CRIM 3634, FVI 3634, and SOCI 3634. *Prerequisite:* 3 ch from any SOCI course.

SOCI3635　　　　　**Conflict Resolution**　　　　　**3 ch**

The course explores the nature of social and professional responses to conflict and conflict resolution. It critically assesses, contrasts, and compares theoretical literature and research studies on processes such as adjudication and arbitration, negotiation, restorative justice, circle sentencing, and mediation in the context of gender, culture and social-economic power. Students will have an opportunity to explore how conflict resolution processes, and the skills and techniques associated with them, affect how conflict is perceived and resolved.

SOCI3636　　**Restorative Justice (Cross-Listed: CRIM 3636)**　　**3 ch**

Examines the paradigms of both restorative and transformative justice. Reviews criminal justice systems in post-industrial societies with a focus on punishment as the principal response to crime. Contrasts restorative justice with the current paradigm of retributive justice. Discusses victims, offenders, and the community within the context of the failure of the retributive system in meeting its responsibilities towards them. Critically analyses prisons, limitations of restorative justice models and programs, and Indigenous traditions in community justice. **NOTE:** Credit can only be obtained for *one* of CRIM 3636 and SOCI 3636.

SOCI3662 Understanding Genocide (Cross-Listed: CRIM 3662) 3 ch [W]

Violence is central in society, and genocide is one of its most destructive manifestations. Genocides are perpetrated to exclude or remove a group on the grounds of ethnicity, race, or political or religious affiliations. Genocide is a crime against humanity, and it manifests itself around the world. Using the Genocide Convention of the United Nations, this course explores different types of genocide (biological, physical, and cultural). The overall objective is to understand what factors lead one group of people to the killing of members of another particular group. **NOTE:** Credit can only be obtained for *one* of CRIM 3662 and SOCI 3662.

SOCI3666　　　　**Icons of Non-Violence I**　　　　**3 ch [W]**
　　　　　　　　　(Cross-Listed: CCS 3666)

Examines the religious, philosophical and ethical justifications from the perspectives of different religious traditions for non-violence as a tool for social change in the contemporary world. We will study the concepts and

theories of non-violence that may include in the selected writings of L.N. Tolstoy (Russia), M. Gandhi (India) and R. Menchu (Guatemala) within their cultural, social, historical and religious traditions course is offered in English. *Prerequisite*: 30 ch or permission of the instructor.

SOCI3667   **Icons of Non-Violence II**   **3 ch [W]**
(Cross-Listed: CCS 3667)

Examines the religious, philosophical and ethical justifications for non-violence as a tool for social change in the contemporary world from the perspectives of diverse religious traditions. We will study the concepts and theories of non-violence that may include selected writings of the 14th Dalai Lama, Cesar Chavaz and Wangari Maathai in their religious, cultural, social and historical backgrounds. *Prerequisite:* 30 ch or permission of the instructor.

SOCI3668   **Women, Creativity, and Nonviolence**   **3 ch (3C) [W]**
(Cross-Listed: CCS 3668 and FVI 3668)

Examines the creative contributions of women to the resolution of conflicts through the means of nonviolent tools. Discusses their achievements and their tactics, by drawing on intersectionality as an important methodology in the analysis of the work of many outstanding women from diverse countries such as Yemen, Russia, the USA, Chile, Liberia, Nigeria, and Brazil among others. Focuses on the creative impact of women successfully building peace through nonviolent means. Provides a study of how and why gender matters in the contemporary world. Open to students who have completed 30 ch of university courses or by permission of the instructor. **NOTE:** Credit can only be obtained for *one* of CCS 3668, FVI 3669, and SOCI 3668.

SOCI3714   **Introduction to GIS for the Social Sciences**   **3 ch**

Teaches students from all backgrounds and abilities how to use Geographic Information Systems (GIS) to analyze spatially located data in social sciences and a variety of research areas, such as public health, history, criminology, economics, emergency planning, environmental studies, and political science. The course targets beginner students and participants who do not have any previous knowledge of Geography or Geomatics. It provides students with an overview of methodologies and techniques to use location-based information in datasets and improve analysis and patterns' visualization. The course offers an easy, hands-on introduction to spatial analysis.

SOCI3733   **Sex, Gender, and Population**   **3 ch [W]**

Learn to recognize and thoughtfully interpret the distinct concepts of sex (as a biological factor) and gender (as a social determinant) in population and health studies. Emphasis is placed on the analysis of quantitative data for considering when biological differences make a difference and when society creates differences. Some background in the basic language and techniques of quantitative approaches to social science data is advised.

SOCI3801   **Food Studies (Cross-Listed: ANTH 3801)**   **3 ch (O) [W]**

This course provides students with a general understanding of the role of food in contemporary societies by exploring the socio-cultural aspects of food production and consumption in a cross-cultural context. It also analyzes the economic and political landscape of farming in an international context by examining food politics over regulatory measures in food labelling and safety, genetically modified food, organic and sustainable agriculture, and the future of the world food system. **NOTE:** Credit can only be obtained for *one* of SOCI 3801 and ANTH 3801.

SOCI4004   **Pathways in Social Theory**   **3 ch [W]**

This course conducts a systematic analysis of important readings in social theory relevant to both the social sciences and the humanities. Topics covered may include, but are not limited to, such areas as the historical development of social theory (e.g. the Ancient Greeks, the Enlightenment), the theoretical foundations of research methodologies (e.g. positivism and constructionism), key debates in sociology (e.g. subject/object, agency/practice/structure), or in-depth focus on the approaches of major social theorists. *Prerequisites*: SOCI 3004 and SOCI 3014, or by the Instructor's permission.

SOCI4011 Qualitative Research Methods for the Social Sciences 3 ch [W]

This course offers an in-depth learning experience with qualitative methodological approaches and qualitative research methods in the social sciences. It introduces students to qualitative methodology and its usage in the field, and highlights important ethical considerations and concerns. Students will explore how to develop qualitative research designs; how to define a research question and how to answer it by developing a research protocol. This course offers students the ability to learn how to choose analytical methods for their data and how to interpret the results obtained from it. *Prerequisite*: Students must have passed an introductory research method course prior to enrolling in this course, or have the Instructor's permission.

SOCI4022 Quantitative Research Methods for the Social Sciences 3 ch [W]

This course offers an in-depth learning experience with quantitative methodological approaches and quantitative research methods in the social sciences. This course covers the foundations of research design, data collection, and data analysis. In this class, students will learn how to develop quantitative research designs to answer a research question. They will learn about sampling, primary data collection with standardized instruments, and data analysis with descriptive and inferential statistical methods. Students will be able to learn from this course how to prepare a standardized questionnaire and interviews, as well as to choose between statistical analytical methods for their primary and secondary data. Finally, students will learn and practice how to interpret and write about their results. *Prerequisite*: It is required for students to have passed an introductory research method course prior to enrolling in this course, or by the Instructor's permission.

SOCI4122   **Answering Questions with a Statistical Package**   **3 ch**
for Social Sciences

SPSS and Stata are statistical software packages largely used in the social sciences. If applied to analyze large scale secondary data, they provide students and researchers with a powerful tool to answer critical questions on phenomena, trends, and relationships in a variety of disciplinary areas. Most textbooks and courses at the undergraduate and graduate level tend to combine the teaching of substantive topics in methodology and methods with practical applications of this software package. This course tries to contribute twofold. Practically, it aims at offering students and faculty an opportunity to learn about one software package (either SPSS or Stata), its tools, and its challenges independently from content coverage on methods and statistics. While maintaining a substantial coverage of analytical and statistical topics, the course will focus on how to design and implement data analysis with SPSS or Stata syntax commands rather than on teaching statistics.

SOCI4253   **Social Media and the Digital World**   **3 ch [W]**

Examines the social and cultural implications of communication via computer network, with particular emphasis upon the similarities to and differences from other forms of electronic communication (e.g., television, telephone, radio).

SOCI4263   **Sociology of Body**   **3 ch [W]**

Using a variety of teaching methods, including lecture, seminar discussion, and video exercises, this course provides students with a sociological understanding of the body in both historical context and contemporary society.

SOCI4264   **Health Care in International Context**   **3 ch [W]**

Explores the nature and delivery of health care in a variety of international settings. Emphasis will be placed on comparative analysis of health care systems in relation to prevailing patterns of health and disease as well as the broader socio-cultural contexts in which they are delivered.

SOCI4266 Special Topics in the Sociology of Health and Healthcare 3 ch

Covers a broad range of issues in the sociology of health and health care. The focus is on the major sociological paradigms of structural functionalism, symbolic interactionism, conflict theory, and critical postmodernism as they pertain to analysis of issues in health, illness, health care, and health policy.

SOCI4267   **Critical Study of Public Health**   **3 ch**

Explores how the culture of public health and biomedicine and broader social structures may influence policy, practice, lay conceptions, and patient experiences. Students learn to critically analyze disparities in health by examining how intersecting social locations, stigma, and historically-embedded power relations affect health. Students also assess public messaging and programs in their effectiveness at reifying, reproducing, or repudiating existing inequities and the embodiment of structural disparities.

SOCI4301   **Topics in Criminology & Socio-legal Studies**   **3 ch [W]**
(Cross-Listed: CRIM 4301)

This seminar engages in an advanced in-depth analysis of topics in the field of criminology, and their social and political implications. The focus of the course will vary from year to year. **NOTE:** Credit can only be obtained for *one* of CRIM 4301 and SOCI 4301.

SOCI4323   **Religion and Culture**   **3 ch**

The sociological study of varied world religions at both societal and interpersonal levels. Topics may include new religious movements, conversion, gender issues, and the relations between Eastern and Western belief systems.

SOCI4334   **Education and Society**   **3 ch**

Studies critical social and educational processes and structures, and the rapport of educational institutions with other social institutions, using comparative concepts and theories of sociology.

SOCI4336   **Families, Law and Social Policy**   **3 ch**

A critical examination for advanced students of theoretical, legal and policy issues related to selected aspects of changing patterns of families and familial relationships in Canadian and other Western societies.

SOCI4337   **Legal Responses to Family Violence**   **3 ch [W]**
                 (Cross-Listed: CRIM 4337)

Explores the successes, challenges, and failures of legal responses to domestic violence. Why has the legal system had difficulty responding effectively to domestic violence? Does it have something to do with the nature of law, the nature of gender, and the nature of social science and social change? What happens when law is confronted by changing social conceptions of gender, of children, of the roles of men and women? Does culture matter? Do new multi-disciplinary, collaborative judicial initiatives offer promise or peril? Students will review legal cases and socio-legal research in order to search for answers to such questions. **NOTE:** Credit can only be obtained for *one* of CRIM 4337 and SOCI 4337.

SOCI4355   **Sociology of Law (Cross-Listed: CRIM 4355)**   **3 ch [W]**

Provides a sociological analysis of law in modern society, including discussion of legal theory, sociological and feminist criticisms of law, law as a means of social control and change, socio-legal research into the processes used by the legal system and its alternatives (such as mediation, restorative justice models, victim-offender reconciliation programs) to resolve disputes, and the abilities of the legal system and its alternatives to offer justice to the disadvantaged. **NOTE:** Credit can only be obtained for *one* of CRIM 4355 and SOCI 4355.

SOCI4513   **Inequality and Social Justice**   **3 ch [W]**
                 (Cross-Listed: CRIM 4513)

Provides a sociological examination of current perspectives, responses, and debates about the meaning of equality and the just society. Possible topics include the shift from individual rights to collective rights; competition and cooperation at a macro and a micro level. **NOTE:** Credit can only be obtained for *one* of CRIM 4513 and SOCI 4513.

SOCI4573   **Social Network Analysis (Cross-Listed: CRIM 4573)**   **3 ch [W]**

Provides instruction on the core methodological skills related to the social-scientific study of networks, as well as familiarity with social network analysis software. The methods used to conduct social network analysis (SNA) focus on gathering and applying data on relations, interactions, flows, roles, and affiliations, which are then used to conduct sociometric tests that provide insight into the overall influence and structure of social networks, groups embedded within networks, and how individuals fit within networks. Focuses on the applied knowledge of social network analysis. A mathematical or statistical background is not required. **NOTE:** Credit can only be obtained for *one* of CRIM 4573 and SOCI 4573.

SOCI4585   **Organized Crime (Cross-Listed: CRIM 4585)**   **3 ch [W]**

Takes a sociological and criminological approach to understanding core concepts and theories of organized crime. Provides a familiarity with, and a conceptual overview of, the various forms and incarnations of organized crime, ranging from street gangs to highly complex and sophisticated transnational criminal organizations. **NOTE:** Credit can only be obtained for *one* of CRIM 4585 and SOCI 4585.

SOCI4703   **Social Consequences of Population Dynamics**   **3 ch [W]**

Examines how demographic challenges and opportunities have important implications in all aspects of the world in which we live. Explores the key theories and measures to understand population dynamics, including changing population needs for health, education, and social services.

SOCI4803   **Independent Study in Sociology**   **3 ch [W]**

Course study to be of an advanced topic in sociology chosen jointly by student and instructor with the permission of the Department Chair.

SOCI5000   **Honours Thesis**   **6 ch [W]**

A reading and research course open only to Honours students in their final year and meant to produce a 40-60 page Honours Thesis that must be approved by the Department. Permission to take this course must be sought from the Director of Undergraduate Studies in Sociology in agreement with the supervisory professor in the desired area of study.

SOFTWARE ENGINEERING

NOTE: See beginning of Section H for abbreviations, course numbers and coding.
*L - Laboratory periods on alternate weeks.
* - Engineering electives. Not all offered every year.

Consult Department as to availability of courses from year to year.
All courses must be passed with a grade of C or better.

SWE4040   **Software Engineering Design Project**   **8 ch (2C 4L) [W]**

A software design and implementation experience involving a medium to large group. Students prepare requirements, specification, analysis and design documents as a team toward development of a useful software product and use the documentation to implement and test the product. The development process should consider a broad range of constraints including non-functional requirements to the software product, health and safety, sustainable development and environmental stewardship. Students manage their projects professionally, present their design work orally, and demonstrate formally that the product meets its requirements. *Prerequisites:* CS 3503 or at least 2 terms of co-op and 100 ch in the software engineering program or permission from the instructor.

SWE4103   **Software Quality and**   **4 ch (3C 3*L) [W]**
              Project Management

Software Quality: Emphasizes testing, verification and validation, techniques. Introduces formal specification languages, statistical software reliability engineering, software development process monitoring and maturity models, and process and product metrics. Software Project Management: Emphasizes software project tracking, planning and scheduling, organizing and managing software development teams, introduces factors influencing productivity and success, risk analysis and planning for change. *Prerequisite:* ECE 4403 or CS 2043, CS 2613 or CS 3503, or permission from the instructor.

SWE4203   **Software Evolution and Maintenance**   **4 ch (3C 3*L)**

Maintainability and reusability analysis. Approaches to maintenance and long-term software development. Change management and impact analysis. Release and configuration management. Reengineering and reverse engineering. Regression testing. *Prerequisite:* ECE 4403 or CS 2043 or permission from the instructor.

SWE4403   **Software Architecture and Design Patterns**   **4 ch (3C 2*L) [P]**
                (Cross-Listed: CS 4015)

This course introduces concepts of software design patterns and architecture. The course covers principles of reusable object-oriented programming, as well as creational, structural, and behavioural patterns. The course also covers software quality attributes, architectural tactics and patterns, designing and documenting software architecture, architecture reconstruction, architecture evaluation, and software product lines. Students will practice applying and implementing design patterns and software architecture design and evaluation in course work by developing various software systems. *Prerequisite:* CS 2043 or permission from the instructor.

SWE4913   **Independent Project**   **4 ch [W]**

An independent project or literature survey. Students work under the supervision of a chosen faculty member. Students are responsible for finding a supervisor and initiating the project or literature survey. Deliverables include a comprehensive report detailing the work. *Prerequisite:* Successful completion of 100 ch in an undergraduate program in the Faculty of Engineering or Faculty of Computer Science.

SPANISH

See beginning of Section H for abbreviations, course numbers and coding.

SPAN1201   **Intensive Spanish I**   **3 ch (3C)**

Students will acquire and develop listening, oral and writing skills in an intensive cultural immersion setting. Videos, music, dance, cooking and other cultural activities will facilitate the learning process. This course will normally be offered in either the Spring or Summer session, and follows a two-week total immersion format. Closed to students with any knowledge of Spanish.

SPAN1203   **Introductory Spanish I**   **3 ch (3C)**

Gives students solid background in the fundamentals of the Spanish language by engaging them in both classroom and computer laboratory settings in communicative use of the four language skills: listening, speaking, reading and writing. Multimedia materials will be used to provide a background in Hispanic culture. Closed to students with any knowledge of Spanish. *Prerequisite:* No prerequisite.

SPAN1204   **Introductory Spanish II**   **3 ch (3C)**

Continuation of SPAN 1203. Students will build on the materials covered in SPAN 1203. Emphasis will be placed on improved listening, speaking, reading and writing. Multimedia approach to language and culture will be used. Students will be acquainted with background on Hispanic culture. *Prerequisite:* SPAN 1203.

SPAN1304   **Introductory Spanish II (Business)**   **3 ch (3C)**

Intended for business students who have successfully completed SPAN 1003 or 1203. Enhances students' grounding in the basics of Spanish. Presents realistic situations and specialized vocabulary that administration and business professionals need to communicate in the course of their daily work in the Hispanic environment. Students also develop cultural and historical understanding of social etiquette in the Hispanic world. Multimedia materials will be used to provide background in Hispanic culture. *Prerequisite:* SPAN 1203. Credit will not be given for both SPAN 1204 and SPAN 1304.

SPAN2203   **Intermediate Spanish I**   **3 ch (3C)**

Intended for students who have successfully completed Spanish Introductory courses. Enhances students' linguistic proficiency, allowing them to handle a variety of social situations. Students also develop cultural and historical understanding of the Hispanic world. By the end of SPAN 2203 students have insight into grammatical structures of the language, are able to sustain a conversation in real life situations and are able to discuss aspects of the Hispanic world. Multimedia materials will be used to provide a background on Hispanic culture. *Prerequisite:* SPAN 1204 or SPAN 1304.

SPAN2204   **Intermediate Spanish II**   **3 ch (3C)**

A continuation of SPAN 2203, this course aims to further enhance students' linguistic proficiency and provide the concrete knowledge of more complex grammatical structures. *Prerequisite:* SPAN 2203.

SPAN2303   **Intermediate Business Spanish**   **3 ch (3C)**

The main course objective is to continue introducing students to the main requirements for successfully conducting business in Spanish: 1. the cultural and practical aspects of business in Spain and Latin America, and 2. the vocabulary and structures needed to communicate in a business setting. In addition to a basic text, role-playing and case studies, the study of authentic documents will be used to advance both knowledge and skills in areas such as preparing a resume, communicating by phone, fax, letter, matters concerning banking, advertising, marketing and other topics of interest to business institutions as well as the household budget. *Prerequisite:* SPAN 1204 or SPAN 1304

SPAN3202   **Advanced Oral Spanish I**   **3 ch (3C)**

This course will build vocabulary, increase fluency and enhance the style and fluidity of spoken Spanish through continued development and intensive use of oral Spanish skills. Students who have participated in any Spanish language study abroad program, are native speakers, or who have other immersion experience are not eligible. *Prerequisite:* SPAN 2204 or permission of the instructor.

SPAN3203   **Advanced Spanish I: Advanced Grammar**   **3 ch (3C)**

Intended for students who have successfully completed Intermediate Spanish. The main objective of the course is to improve linguistic competency (acquired by speaking and writing) through the exploration of issues in the contemporary Hispanic world. A variety of language models, including newspapers, magazine articles, interviews and classroom discussions will set the stage for the assimilation of the conversational function of the language. Audio-visual materials will also be used. *Prerequisite:* SPAN 2204.

SPAN3204   **Advanced Spanish II:**   **3 ch (3C)**
     Conversation and Composition

Normally taken (as with SPAN 3203) with the first literature courses, thus complementing each other in improving the student's written and oral fluency through different types of class participation and assignments. *Prerequisite:* SPAN 3203.

SPAN3205   **Advanced Translation (O)**   **3 ch (3C)**

Intensive translation from and into colloquial and more formal language for the acquisition of written and translating fluency. Besides the translation of a play from English into Spanish, it includes selections in both languages from the press and other sources, and practice of interpretation. *Prerequisite*: SPAN 2204.

SPAN3456   **The Cinema of Spain (O)**   **3 ch (3C)**

This course will provide the students with a background in Spanish cinema, emphasizing the most productive eras such as the Surrealist Movement and the Movida of the 1980s. Films to be studied include those of directors such as Luis Buñuel, Pedro Almodóvar, Alejandro Amenabar, Elías Querejeta, Mario Camus, Bigas Luna, Carlos Saura, Victor Erice, Laura Mañá, and Iciar Bollaín. Equal emphasis will be placed both on cinematographic and thematic analysis of the cinema, and, when appropriate, cultural and historic context will be provided. Films will be screened previous to class (most often with subtitles) and will be analyzed and discussed in class. The course will be offered in English and is open to students who have successfully completed at least 30 credit hours at

university level. Students taking this course to fulfill a Major or Honours requirement in Spanish will submit required work in Spanish.

SPAN4901   **Honours Thesis**   **3 ch [W]**

A reading and research course open to students qualifying for Honours in Spanish and Latin American Cultures. This is an in-depth independent research project on a specific topic in Spanish or Latin American Literature or Culture. To enrol in this course students must have already consulted a professor to supervise their project. Students will then develop a project and do the required research. The research project will lead to the writing of an Honours Thesis in Spanish, normally 35-40 pages in length.

STATISTICS

See also "Mathematics".
Students should note that in the Science Faculty the minimum acceptable grade in a course which is required by a particular program or is used to meet a prerequisite, is a "C". Any student who fails to attain a "C" or better in such a course must repeat the course (at the next regular session) until a grade of "C" or better is attained. Students will not be eligible for graduation until such deficiencies are removed. The only exception will be granted for a single course with a "D" grade that is a normal part of the final year of that program, and is being taken for the first time in the final year.
STAT 2*** courses may not be taken by students who have passed a higher level STAT course.
See beginning of Section H for abbreviations, course numbers and coding.

STAT2043   **Statistics for Social Sciences I**   **3 ch (3C)**

Topics from survey statistics: simple random sampling; systematic sampling, question composition, scaling techniques. Topics from basic statistics: descriptive statistics; estimating/testing means, standard deviations, proportions, paired data versus two independent samples, chi-square tests. *Prerequisites:* Successful completion of at least one year of program. **NOTES**: Credit can be obtained in only one of STAT 2043, STAT 2253, STAT 2263, STAT 2264 or STAT 2593. Not to be taken for credit by CS, MATH or STAT majors.

STAT2253   **Introductory Statistics for Forestry Students**   **3 ch (2C 2L)**

Emphasis on applications to forestry and biology, using a statistical package. Graphical and numerical summaries of data; Populations, samples, sampling techniques; Normal distribution; Estimation and tests for means, medians, proportions; Individual versus mean behaviour; Matched pairs, independent samples, analysis of variance; Regression; Chi-squared tests for categorical data. **NOTE**: Credit can be obtained for only one of STAT 2043, STAT 2253, STAT 2263, STAT 2264 or STAT 2593.

STAT2263   **Statistics for Non-Science Majors**   **3 ch (3C)**

An introductory course in statistics. Experiments, sampling, basic descriptive statistics. Probability, random variables, Normal distribution. Confidence intervals for means and proportions. Tests of hypotheses. Paired samples vs. two independent samples. Contingency tables. Regression, correlation. Introduction to analysis of variance. Examples drawn from the health sciences. Use of a statistical computer package. *Prerequisite:* A New Brunswick high school mathematics course, either Pre-Calculus 110 or Foundations of Mathematics 120, or equivalent. **NOTE**: Credit can be obtained for only one of STAT 2043, STAT 2253, STAT 2263, STAT 2264, or STAT 2593.

STAT2264   **Statistics for Biology**   **3 ch (3C)**

An introductory course in statistics. Probability, Bayes' Theorem, applications of probability to genetics, random variable, expectation, binomial and normal random variables, confidence intervals for means and proportions, prediction intervals, tests of hypotheses, paired data versus two independent samples, brief introduction to analysis of variance, regression, correlation, contingency tables, examples drawn from medicine and biology, use of a statistical computer package. *Prerequisite:* MATH 1003 or MATH 1053. **NOTE**: Credit can be obtained for only one of STAT 2043, STAT 2253, STAT 2263, STAT 2264, or STAT 2593.

STAT2593   **Probability and Statistics for Engineers**   **3 ch (3C)**

Probability spaces: combinatorial probability; conditional probability and independence. Random variables: discrete distributions; continuous distributions; expectation, variance, and covariance; linear combinations. Statistics: descriptive and graphical statistics; sampling distributions. Inference: point estimation; confidence intervals; hypothesis tests; paired data designs; two sample inference. *Prerequisite:* MATH 1013. **NOTE**: Credit can be obtained for only one of STAT 2043, STAT 2253, STAT 2263, STAT 2264, or STAT 2593.

STAT3043   Statistics for Social Scientists II   3 ch (3C)

Topics from survey statistics: stratified sampling; cluster sampling. Questionnaires: construction, administration, interpretation and reporting. Topics from basic statistics: regression; one way and two way analysis of variance. *Prerequisite:* STAT 2043. Not to be taken for credit by CS, MATH or STAT majors. **NOTE**: Credit can be obtained for only one of STAT 2253, STAT 2263, STAT 2264, STAT 2593, or STAT 3043.

STAT3083   Probability and Mathematical Statistics I   3 ch (3C)

The first half of a two-part sequence covering various topics in probability and statistics. This course provides an introduction to probability theory and the theory of random variables and their distributions. Probability laws. Discrete and continuous random variables. Means, variances, and moment generating functions. Sums of random variables. Joint discrete distributions. Central Limit Theorem. Examples drawn from engineering, science, computing science and business. *Prerequisite:* MATH 1013. **NOTE**: Credit can be obtained in only one of STAT 2593 or STAT 3083.

STAT3093   Probability and Mathematical Statistics II   3 ch (3C)

The second half of a two-part sequence covering various topics in probability and statistics. This course provides an introduction to essential techniques of statistical inference. Samples and statistics versus populations and parameters. Brief introduction to method of moments and maximum likelihood. Tests and intervals for means, variances and proportions (one and two-sample). Multiple regression, residual plots. Analysis of variance, brief introduction to experimental design. Chi-squared tests. Examples drawn from engineering, science, computing science and business. Use of a statistical computer package. *Prerequisite:* STAT 3083. Students with exceptional standings in STAT 2593 may seek permission from the instructor.

STAT3303   Survival Analysis   3 ch (3C)

Concepts, models and techniques in survival analysis including types of censoring and truncation, Kaplan-Meier estimators, log-rank statistics, parametric models, proportional hazards models, extended PH models, competing risks, recurrent events and frailty models. *Prerequisites:* STAT 2593 or STAT 3083.

STAT3373   Elementary Experimental Design   3 ch (3C)

Randomization, one and two way classifications. Latin squares, factorial experiments, nesting, incomplete blocks, linear regression. Emphasis on applications. Extensive use of a statistical computer package. *Prerequisites:* STAT 2263, STAT 2264, STAT 2593, or STAT 3093, MATH 1503 or 2213.

STAT3383   Introduction to Stochastic Processes (A)   3 ch (3C)

Exact contents may vary from year to year, e.g.: counting processes and Poisson processes; renewal processes (discrete); finite state Markov chains; stationary covariance processes. *Prerequisites:* STAT 2593 or STAT 3083 and one of MATH 2013 or MATH 2213.

STAT4043   Sample Survey Theory   3 ch (3C)

Simple random sampling; stratified sampling; systematic sampling; multi-stage sampling; double sampling; ratio and regression estimates; sources of error in surveys. *Prerequisite:* STAT 3093.

STAT4053   Regression Analysis   3 ch (3C)

Simple and multiple linear regression. Regression diagnostics. Prediction and model testing. Qualitative variables as predictors. Transformation of variables. Analysis of collinear data. Variable Selection and model reduction procedures. Data analysis using software. **NOTE:** Credit may be obtained for only one of STAT 4053 or ECON 4625. *Prerequisites:* STAT 3093 and one of MATH 1503 or MATH 2213.

STAT4073   Categorical Data Analysis   3 ch (3C)

Logistic regression models for binary response variables, log-linear models for contingency tables, Poisson regression models for count response variables, multinomial regression models for categorical response variables, cumulative logic and continuation-ratio regression models for ordinal response variables, model selection, some special topics in generalized linear models. Emphasis will be on computer implementation and applications in social sciences, psychology, education, medicine, sciences and engineering. *Prerequisite:* STAT 3093 or the permission of the instructor.

STAT4083   Multivariate Methods for Statistical Learning   3 ch (3C)

Multivariate normal distributions, variance and correlation matrices. Visualization of multivariate data. Dimension reduction for numerical and categorical data. Simple modelling of covariances by means of exploratory and confirmatory factor analysis. Methodology and techniques of supervised and unsupervised statistical learning. *Prerequisites:* STAT 2503 (at least B) or STAT 3093 and one of MATH 1503 or MATH 2213.

STAT4100   Honours Project   6 ch [W]

Statistics Honours students must complete a project under the supervision of a faculty member. The project is to include a written report and an oral presentation. Prior to being admitted into STAT 4100, the student must have been admitted to the Honours Program and have submitted an acceptable project proposal to the department. Normally students would begin preparation and research for the project during their third year of study, submit the proposal by October of their fourth (final) year of study, and complete the written and oral presentation by the end of the winter term, to graduate in May of that year. Honours students in an interdepartmental program with statistics may choose to complete their honours project in statistics.

STAT4293   Applied Statistical Methods with R   3 ch (3C)

Data input and manipulation in basic R. Basic programming. Visualization. Simulation of random variables. Simulation experiments to evaluate estimators and tests. Using optimization to fit models. Data smoothing with splines and kernel density estimation. Bootstraping and other resampling methods. Data analysis will be undertaken by means of R packages and R programming. *Prerequisite:* STAT 2593 (at least B) or STAT 3093.

STAT4303   Mathematical Statistics   3 ch (3C)

Common families of distributions, convergence concepts. Sufficiency, completeness, detailed discussion on methods of finding and evaluating point estimators, interval estimators and hypothesis tests. *Prerequisite:* STAT 3083 or permission of the instructor.

STAT4333   Applied Longitudinal Data Analysis   3 ch (3C)

Graphical and tabular displays of longitudinal data, analyses of various types of longitudinal data including normal and non-normal continuous, semi-continuous, count, nominal, and ordinal responses, marginal and conditional inferences, random effects models, extensive use of statistical software, emphasis on applications. *Prerequisite:* STAT 4053 or permission of the instructor.

STAT4443   Time Series Analysis and Applications (A)   3 ch (3C)

Discrete time series and stochastic processes; autocorrelation and partial correlation functions; white noise; moving averages; autoregressive, mixed and integrated processes; stochastic models, fitting, estimation and diagnostic checkup; forecasting; forecasting in seasonal time series; applications would include problems from Economics, Engineering, Physics. *Prerequisite:* STAT 3093.

STAT4903   Independent Study in Statistics   3 ch

Advanced topic in Statistics to be chosen jointly by student, advisor, and Department Chair. May be taken for credit more than once. Title of topic chosen will appear on transcript. *Prerequisite:* Permission of Department.

TECHNOLOGY MANAGEMENT AND ENTREPRENEURSHIP

See beginning of <u>Section H</u> for abbreviations, course numbers and coding.

TME1001   Introduction to Technology Management   3 ch
                 and Entrepreneurship

Provides students an opportunity to be introduced to TME topics and will serve as a foundation for subsequent TME courses. Topics addressed may vary based on faculty expertise and emergent issues.

TME2001   Creativity, Innovation and Value Creation   3 ch (3C) [W]

Introduction to the roles of creativity, value creation and entrepreneurship in the innovation process. Students will learn about idea generation, ways to enhance individual and group creativity, value creation and entrepreneurship in its various forms. Students will develop the skills and competencies that contribute to innovation including: curiosity and creativity, accepting and managing risk, ability to link innovation to value creation (in a societal context), the ability to link societal value to entrepreneurship, communication skills, the ability to work on the boundaries of disciplines and the ability to work within interdisciplinary teams. Students will analyze, social, environmental and cultural aspects of creativity, value creation and innovation, including contemporary ideas about how innovation shapes and its shaped by society and culture, and the relationship. Between innovation and social change.

TME3013   Entrepreneurial Finance   3 ch

An introduction to fundamentals of finance in new ventures and/or high growth technology-driven businesses. Students will learn how to interpret and analyze financial statements and develop proforma financial statements. The course will enable students to enhance their knowledge of sound principles of finance and alternative sources of finance. Students will learn about venture capital financing and initial public offerings (IPO) and the role they play in financing high growth, high tech businesses. Students will also develop skills in financing negotiations. *Prerequisite:* 80

credit hours of approved courses, or permission of the TME program Chair.

TME3113   **Business Planning and Strategy in an**   **3 ch [W]**
Entrepreneurial Environment

An introduction to business planning and strategy concepts in start-up and early stage technology-driven businesses. The course addresses a wide spectrum of functional activities in a dynamic business enterprise including finance, operations, human resource management, change management, sales/marketing, and customer relationship management. Business analysis, communication, and planning skills are developed and students are introduced to shifting business paradigms in the global, digital economy. *Prerequisite:* 80 credit hours of approved courses, or permission of the TME program Chair.

TME3213   **Quality Management**   **3 ch**

Designed to prepare participants for the management practices which they might expect to encounter in a progressive organization. Many of these practices involve the standardization and continuous improvement of business processes. The course explores implementation of Lean and Six Sigma, as well as -ISO 9000, the international standard on quality management. It also focuses on the use of continuous improvement and Statistical Process Control (SPC) concepts, which lead to fundamentally new ways of thinking about innovation and problem solving. *Prerequisite:* 80 credit hours of approved courses, or permission of the TME program Chair.

TME3313   **Managing Engineering & Information Technology Projects**   **3 ch**

The future of most organizations depends on successful projects. The participants will gain an understanding of the principles of project management including organizing, planning, scheduling and controlling projects to achieve a set of objectives. The course will enhance knowledge and skills of project managers in such topics as people management skills, managing project risks, controlling project changes and systems thinking. Emphasis is placed on technology-intensive projects which tend to have a high degree of specialized human resources skills/knowledge requirements. *Prerequisite*: 80 credit hours of approved courses, or permission of the TME program Chair.

TME3346   **Marketing of Technological of Goods and Services**   **3 ch**
(Cross-Listed: ADM 3375)

Provides an introduction to the marketing of technology focused on industrial goods and services. Includes essentials of marketing, such as product development, promotional design, distribution, pricing/budgeting determination, strategic analysis, communication skills, client/customer relations, and considerations for the small business environment. *Prerequisite:* 36 credit hours of approved courses, or permission of the TME program Chair.

TME3386   **Special Topics in Technology Management**   **3 ch**
and Entrepreneurship

Provides selected students an opportunity to complete an independent project course of study. Permission of both the instructor of the associated course and the program Chair is required. Students may register for this course only once during their degree. *Prerequisites:* 80 credit hours of approved courses, or permission of the TME program Chair

TME3396 Special Topics in Management and Entrepreneurship   **3 ch**

Provides selected students an opportunity to complete an independent or group-based course of study. Permission of both the instructor of the associated course and the program Chair is required. Students may register for this course only once during their degree. *Prerequisite:* 80 credit hours of approved courses, or permission of the TME program Chair

TME3413   **Technological Creativity and Innovation**   **3 ch**

An introduction to technological entrepreneurship from two perspectives: Creativity (the production of new technology-based business ideas/opportunities by entrepreneurs) and Innovation (the implementation of those ideas). Students will be presented entrepreneurship as a career alternative, the entrepreneurial process, creativity and its components,

management of creativity and innovation in organizations, evaluation of entrepreneurial opportunities and the linkages between entrepreneurship, creativity and innovation, as well as the economic and social impacts of technology on society. Students generate new venture ideas or ideas for a social enterprise, evaluate the feasibility, pitch the merits, and create a business plan that they defend in a contest. The course is particularly aimed at students who aspire to launch their own startup, those who would like to investigate startup as a career option, or those who wish to familiarize themselves with the concepts, issues, and techniques of new venture creation and entrepreneurship to better prepare for the changing business environment. *Prerequisite:* 80 credit hours of approved courses, or permission of the TME program Chair.

TME3423   **Technological Risk and Opportunity**   **3 ch**

An introduction to mature and emerging technologies and the entrepreneurial opportunities arising from these technologies. Topics include evolution of technology-intensive industry sectors, assessment of technological risk from an entrepreneurial perspective and the economic and social impacts of technology on society. *Prerequisite:* 80 credit hours of approved courses, or permission of the TME program Chair.

TME3913   **Experiential Learning -**   **3 ch**
Technology Management and Entrepreneurship

An opportunity for experiential learning related to the management of technology and/or technological entrepreneurship. Students co-design, develop and implement a project in collaboration with an external organization or a designated mentor. The project must be jointly supervised by a representative of the external organization or mentor, and a designated faculty member. *Prerequisite:* 80 credit hours of approved courses, normally 6 credit hours of TME courses and approval by the TME Chair of the project (prior to registration in the course).

TME4025   **Product Design and Development**   **8 ch (2C 2T 4L) [W]**

Full-year Product Design and Development course (fall and winter of same academic year) which may be taken in place of the final-year design course in most engineering program. The cornerstone is a project in which teams of 4 or 5 students conceive, design and prototype a product. The proposed solution would use modern tools and methods for product design and development, and should meet a broad range of constraints including health and safety, sustainable development and environmental stewardship. Weekly class sessions are conducted in lecture or workshop mode and employ cases and hands-on exercises to reinforce the key ideas. Topics include identifying customer needs, concept generation, product architecture, industrial design, and design-for-manufacturing. *Prerequisites:* Restricted to students who have met the requirements of the capstone design course in their engineering program, and have received approval from both their degree program coordinator and the TME program Chair. **NOTE**: TME 5025 is an 8 ch course and if the final-year design course in your degree program is assigned less than 8 ch, the additional credit hours may only be used to meet degree program requirements subject to approval of your program coordinator. Please consult your degree program coordinator for the position of your Department on this course.

TME5386   **Entrepreneurial Resilience**   **3 ch**

Introduction to the roles of self, society, and network in the wellness process. Students will learn about wellness practices, ways to identify harmful behaviors/habits, identify positive behaviours/habits, and researching local resources. Students will develop the skills and competencies that contribute to overall wellbeing including self-care, sustainability pockets, communication skills, resourcing, and implementing plans.

UNIVERSITY STUDIES

UNIV0101   **University Skills**   **0 ch (2C 1T)**

This course is designed to promote and enhance student success at UNB. Stresses access to campus resources and provides practical demonstrations of effective study practices. Includes formal lectures as well as small group tutoring. Students normally enrol in the section oriented to their specific faculties. Degree credit for the course is at the discretion of individual faculties.