

UNDERGRADUATE CALENDAR OF THE UNIVERSITY OF NEW BRUNSWICK CANADA 2024-2025

Established 1785 as the Provincial
Academy of Arts and Sciences

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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.

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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

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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 AP, 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- Session M: May 01 - August 30
- Session G: May 1 - August 1
- Session H: May 1 - June 26
- Session J: May 1 - May 22
- Session K: July 2 - August 1

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 2024 - Deadline Dates

	Session J May 1 - May 22 (15 days)	Session G May 1 - August 1 (45 days)	Session H May 1 - June 26 (40 days)	Session K July 2 - August 1 (21 days)	Session M May 1 - August 30 (term independent courses)
Last day to add/drop. Courses dropped up to and including this day are not shown on the academic record.	May 3	May 17	May 15	July 11	May 10
Last day to mark a course as "Extra". The course will not be counted towards the program of enrolment.	May 10	June 6	May 29	July 16	July 2
Last day to withdraw without academic penalty. A grade of "W" withdrawn will be shown on your academic record. After this date, a grade of "WF" (withdraw fail) will apply.	May 14	July 2	June 3	July 21	July 24
Last day for in class tests, applicable to sessions with exam periods.	N/A	July 18	June 20	July 29	N/A

Exam Dates	N/A	August 3-5	June 28, 29	August 3-5	N/A

Deadline for Course Payment	The first day of classes is the deadline for summer term course fees to be paid in full.

2024	Prorated Refund Deadline	The calculation of prorated fees are based on the first day of class up to the sixth classes. No refund will 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 individual course start & end dates.

NOTES: 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.

Summer Term

MONTH	DAY	DATE	EVENT
MAY 2024	Wednesd ay	01	- UNB Summer Term begins - Classes begin: Session J (May 1 - 22). Session G (May 1 - August 1). Session H (May 1 - June 26). Session M (May 1 - August 30) - Tuition fees are due.
	Friday	03	Last day for adding Session J courses. Session J courses dropped up to and including this date not shown on academic record.
	Friday	10	Last day to have a course marked as Extra to degree Session J (not credited to the academic program 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.
	Tuesday	14	Last day to withdraw 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.
	Thursday	15	Last day for adding Session H courses. Session H courses dropped up to and including this date not shown on academic record.
	Friday	17	Spring Convocation - UNB Saint John
	Monday	20	Victoria Day - University Holiday - no classes
	Wednesd ay	22	Last day for in class tests, Session J.
	Wednesd ay	29	Last day to have a course marked as Extra to degree Session H (not credited to the academic program 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.
JUNE 2024	Monday	03	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.
	Thursday	06	Last day to have a course marked as Extra to degree Session G (not credited to the academic program 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.
	Thursday	20	Last day for in class tests, Session H.
	Wednesd ay	26	Last day of classes - Session H
	Thursday	27	Reading Day, Session H, Session M, Session G.

	Friday-Saturday	28, 29	- Exams, Session H - Reading Day, Session M, Session G
JULY 2024	Monday	01	Canada Day - University Holiday - no classes*
	Tuesday	02	Session K classes begin (July 2 - August 1). Tuition fees are due. - 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. - Last day to have a course marked as Extra to degree Session M (not credited to the academic program 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.
	Thursday	11	Last day for adding or dropping Session K courses. Session K courses dropped up to and including this date not shown on academic transcript.
	Tuesday	16	Last day to have a course marked as Extra to degree Session K (not credited to the academic program 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.
	Thursday	18	Last day for in class tests - Session G
	Wednesday	24	Last day to withdraw from Session M courses without academic penalty. A grade of "W" (withdrawn) will be shown on academic transcript. After this date a grade of "WF" (withdrawn fail) will apply.
	Monday	26	Last day for in class tests - Session K.
AUGUST 2024	Thursday	01	Last day of classes - Session G and Session K
	Thursday	02	Reading Day - Session G and Session K
	Friday	03-06	Exams - Session G and Session K
	Monday	05	New Brunswick Day - University Closed - no classes or exams*
	Tuesday	30	Last day of classes for 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, 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.

FALL TERM 2024

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 AP, 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 04, 2024 End Friday, December 06, 2024 61 Teaching Days			
MONTH	DAY	DATE	EVENT
SEPTEMBER 2024	Monday	02	• Labour Day - University Holiday - no classes*
	Wednesday	04	• 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	13	• Last day for adding Fall Term and full-year courses. Fall term and full-year 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.
	Friday	13	• Students may drop and add courses up to the last day to add for the term without being charged a prorated fee. Courses dropped after the last day to add classes will be subject to prorated tuition fees from the first week of classes up to the withdrawal date shown on the student academic record.
	Monday	16	• Last day for payment of University tuition and fees
	Friday	20	• Last day to opt-out of Student Union Health and Dental Plan for those students who entered in September. • Last day to be granted an exemption from the International Health Insurance Plan.
	Monday	30	• National Day for Truth and Reconciliation - University Closed - no classes scheduled*
OCTOBER 2024	Monday	14	• Thanksgiving Day - University Holiday - no classes*
	Friday	18	• Last day to have a course marked as Extra to degree (not credited to the academic program 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.
	Friday	18	• Last day to withdraw from Fall Term courses with prorated refund
	Thursday	24	• Convocation - UNB Fredericton
	Friday	25	• Fall Convocation - UNB Saint John
	Tuesday	29	• Last day to withdraw 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.
NOVEMBER 2024	Monday - Friday	11-15	• Fall Term Reading Week - no classes or tests/assignments scheduled.
	Monday	11	• Remembrance Day
	Friday	22	• 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 2024	Friday	06	• Last day of Fall Term classes (61 Teaching Days)
	Saturday	07	• Reading Day - no classes or tests/assignments scheduled
	Monday	09	• Final examinations begins
	Wednesday	18	• Final examinations end (9 days)
	Thursday	19	• Residence closes for holiday break.

Nursing students may need to participate in preceptorships or clinical 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 2025

Classes start Monday, January 06, 2025 End Wednesday, April 09, 2025 62 Teaching days			
MONTH	DAY	DATE	EVENT
JANUAR Y 2025	Monday	06	Start of classes for both campuses. Students are expected to arrive on campus by the first day of classes.
	Friday	17	- 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" (withdraw no academic penalty) will be shown on the academic transcript. - Last day to withdraw from full-year courses without academic penalty. A notation of "W" (withdrawn) will be shown on the academic transcript. After this date a notation of "WF" (withdraw fail) will apply.
	Friday	17	Students may drop and add courses up to the last day to add for the term without being charged a prorated fee. Courses dropped after the last day to add classes will be subject to prorated tuition fees from the first week of classes up to the withdrawal date shown on the student academic record.
	Monday	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	24	- Last day to opt-out of Student Union Health and Dental Plan for those students who entered in January. - Last day to be granted an exemption from the International Health Insurance Plan for those students who entered in January.
FEBRUAR Y 2025	Monday	17	NB Family Day - University Holiday - no classes*
	Tuesday	18	Last day to have a course marked as Extra to degree (not credited to the academic program 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.
	Friday	21	Last day to withdraw from Winter Term courses with prorated refund
MARCH 2025	Monday-Friday	04-08	Winter term Reading Week - no classes or tests/assignments scheduled.
	Monday	10	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	26	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 2025	Wednesday	09	Last day of Winter Term classes (62 teaching days)
	Thursday	10	Reading Day - no classes or tests/assignments scheduled
	Friday	11	Final Examinations begin
	Friday-Monday	18-21	Easter - University Closed - no classes scheduled*
	Thursday	24	Final examinations end (9 days)
	Friday	25	Residences close

Nursing students may need to participate in preceptorships or clinical 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.

PEOPLE AT UNB

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**THE UNIVERSITY OF NEW BRUNSWICK BOARD OF GOVERNORS,
2022-2023**

EX-OFFICIO MEMBERS

Chancellor

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President and Vice-Chancellor

Paul Mazerolle

Vice President (Research)

David I. MaGee

Vice-President Academic (Fredericton)

Kathy Wilson

Vice-President (Administration and Finance)

Bill Best

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
- KIDNEY-HERMELIN, Jane

- 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

- NOSEWORTHY, Gaia
- WALSH, Kordell

ELECTED BY STUDENTS, SAINT JOHN

- DEBLY, Devin

GOVERNORS EMERITI

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

CHANCELLOR EMERITUS

- CURRIE, Richard J.

FREDERICTON SENATE 2022-2023

EX-OFFICIO MEMBERS

The President: Paul Mazerolle

Vice President Academic (Fredericton): Kathy Wilson

Vice President (Administration and Finance): Bill Best

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: Joshua Leon

Acting Dean of Forestry & Environmental Management:

Michelle Gray

Dean of Graduate Studies: Drew Rendell

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

Associate Vice-Provost (Student Affairs & Services): Sheldon MacLeod

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
- TBA
- HAMLING, Anna
- HORNE, Christine
- SEARS, Matthew

Faculty of Computer Science

- COOK, Paul

Faculty of Education

- ROWETT, Jenny
- KRISTMANSON, Paula

Faculty of Engineering

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

Faculty of Forestry and Environmental Management

- OGILVIE, Jae

Faculty of Kinesiology

- CHESTER, Victoria

Faculty of Law

- FROC, Kerri

Faculty of Management

- CHAWLA, Akhila
- GAJUREL, Dinesh

Faculty of Nursing

- DOIRON-MAILLET, Nancy

Renaissance College

- TJORNBO, Ola

Faculty of Science

- BENTON, J. Bruce
- BROSTER, Bruce
- ČAČIĆ, Branimir
- KUČEROVSKÝ, Dan

Alumni Representative

- MEAGHER, Michael

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

- TBA
- WARD, Jennifer

SIX FACULTY MEMBERS ELECTED AT-LARGE

- EVANS, Patricia
- MANCKE, Elizabeth
- SAHA, Gobinda
- SANTOS, Marcelo
- TBA
- TBA

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

- DOMBROWSKI, Lindsay
- MCGRATH, Sally

SIX STUDENT REPRESENTATIVES ELECTED AT-LARGE

- MBAGA, Kisenge
- NOSEWORTHY, Gaia
- ONIANWA, Patrick
- PABARI, Heer
- SIMON, Emily
- SULLIVAN, Ryan

PART- TIME STUDENT REPRESENTATIVE

- TBA

GRADUATE STUDENT REPRESENTATIVE

- MOMENI, Mohammad

SAINT JOHN SENATE 2022-2023

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):

Bill Best

Vice President (Research):

David MaGee

Associate Vice President (Saint John):

Laurelle LeVert

Dean of Graduate Studies:

Drew Rendell

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

Associate Vice-Provost Student Affairs & 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):

Bill Best

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

Dean, Graduate Studies:

Drew Rendall, 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 Enrolment Mgmt):

Lloyd Henderson

Vice-President (Advancement):

Clint Hamilton, BEd, 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

Acting Associate Vice-Provost Student Affairs and Services:

Nancy O'Shea

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:

Peter Thompson, BA, MA, PhD

Faculty of Management:

Devashis Mitra, BA, PhD, CA, FCA

Faculty of Science:

P.T. Jayachandran, BSc, MSc, PhD

Faculty of Computer Science:

Luigi Benedicenti, BEng, MACS, PhD

Faculty of Education:

Sharon Wahl, BA, MEd, PhD

Faculty of Engineering:

Joshua Leon, 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, LL.M.

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, PhD, CM, ONB, FCAE

Vice-President (Academic) Emeritus:

Robert E. Burrige, 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, Wissenschaftliche Profung fur das Lehramt an Hoheren Scholen, Zweite Philosophische 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
- 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, MSc, 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
- Valsangkar, Arun, BE, ME, PhD, P.Eng, FEC, FCSCE, FEIC - Civil Engineering
- 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 2022	- Ian Church (Geodesy & Geomatics Engineering, F) - Basil Alexander (Law, F)	Fall Convocation 1997	- Kate Frego (Biology, SJ) - Wendy Robbins (English, F)
Fall Convocation 2021	- Hope Alderson (Mathematics & Stats, SJ) - Caroline Purdy (Mathematics & Stats, F)	Fall Convocation 1996	- Judy Buchanan (Nursing, SJ) - James Murray (Classics & Ancient History, F)
Fall Convocation 2020	- Maira A. Law (Psychology, SJ) - Lucy Wilson (Geology, SJ)	Encaenia 1995	- Gracie Getty (Nursing, F) - Steven Turner (History, F)
Fall Convocation 2019	- Leah Bidlake (Computer Science, F) - Kelly Miles (Biology, F)	Spring Convocation 1994	Mohammad Hamdan (Mathematics, Stats & CS, SJ)
Fall Convocation 2018	- Osama El-Temtamy (Business, SJ) - Jessica Webster (Nursing, F)	Encaenia 1994	Lesley Flemming (Biology, F)
Fall Convocation 2017	- Katherine Barclay (Biology, F) - Valerie Reeves (Chemistry, F)	Encaenia 1993	David Townsend (Law, F)
Fall Convocation 2016	- Dongmin, Kim (Business, SJ) - Dowding, Barb (Biology, SJ)	Spring Convocation 1993	Robert Chanteloup (Sociology, SJ)
Fall Convocation 2015	- Newling, Ben (Physics, F) - Hamm, Lyle (Education, F)	Fall Convocation 1992	Phillip Wright (Administration, F)
Fall Convocation 2014	- Rose, Sherry (Education, F) - Kennedy, Sean (History, F)	Encaenia 1992	Barbara Trenholm (Administration, F)
Fall Convocation 2013	- Golding, Jasen (Forestry & Environmental Management, F) - Johnson, John (SASE, SJ)	Encaenia 1991	- William Mullin (Biology, F) - Roger Ploude (English, F)
Fall Convocation 2012	Belanger, Louis (Arts, SJ)	Encaenia 1990	- William Chernoff (Mathematics & Stats, F) - Byron Walton (Engineering, SJ)
Fall Convocation 2011	- Gray, Christopher (Chemistry, SJ) - Civi, Emin (Business, SJ)	Encaenia 1989	- Jane M. Fritz (Computer Science, F) - Friedrich Grien (Chemistry, F)
Fall Convocation 2010	- Durnford, Dionne (Biology, F) - Blatherwick, Mary (Education, F)	Encaenia 1988	- Teresa Killoran (Education, F) - James M. Tolliver (Administration, F)
Fall Convocation 2009	- O'Sullivan, Lucia (Psychology, F) - Larivee, Catherine (Nursing, SJ)	Encaenia 1987	- Barbara MacKinnon (Biology, F) - Donald F. Rowan (English, F)
Fall Convocation 2008	- John Grant McLaughlin (Education, F) - David Flagel (Humanities and Languages, SJ)	Spring Convocation 1986	Pete McGahan (Dean of Faculty, SJ)
Fall Convocation 2007	- Merzik Kamel (Mathematical, Sciences, SJ) - Joanna Everitt (History & Politics, SJ)	Encaenia 1986	Jillian Sullivan (Mathematics & Stats, F)
Fall Convocation 2006	- Sandra Bell (English, SJ) - Phillip Sexsmith (Education, F)	Encaenia 1985	- Wiktor Askanas (Administration, F) - Arun J. Valsangkar (Civil Engineering, F)
Fall Convocation 2005	- Barbara Gill (Education, F) - Allan Reid (Culture & Language Studies, SJ)	Encaenia 1984	- David Rehorick (Sociology, F) - Beverly G. Smith (Law, F)
Fall Convocation 2004	- Danielle Charron (French, F) - Nancy Nason-Clark (Sociology, SJ)	Encaenia 1983	- Reavley Gair (English, F) G. Charles Kunn (Political Science, F)
Encaenia 2003	- Kathleen Berry (Education, F) - Constantine Passaris (Economics, F)	Encaenia 1982	- Daniel M. Hurley (Law, F) - Linda A. Parker (Psychology, F)
Spring Convocation 2003	- Jim Keifer (Biology, SJ) - Sarah Maier (English, SJ)	Encaenia 1981	- Kevin Halcrow (Biology, SJ) - Howard MacFarlane (Civil Engineering, F)
Fall Convocation 2001	- E.W. (Ted) Robak (Forestry & Environmental Management, F) - Barry Bisson (Engineering, F)	Encaenia 1980	- Clayton R. Lewis (Mathematics, F) C. Shirley MacLeod (Nursing, F)
Fall Convocation 2000	- Diana Austin (English, F) - Thom Erdle (Forestry & Environmental Management, F)	Encaenia 1979	- Thomas A. Austin (Computer Science, F) - Daniel M. Keppie (Biology and Forestry, F)
Fall Convocation 1999	- Lily Both (Psychology, SJ) - Paul MacDonald (Psychology, F)	Encaenia 1978	- Verne M. Ireton (Mechanical Engineering, F) - Ronald M. Lees (Physics, F)
Fall Convocation 1998	- Ruth Shaw (Math, Stats & CS, SJ) - Stephen Ross (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

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SECTION A: UNB HISTORICAL SKETCH

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 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

SECTION A: UNB HISTORICAL SKETCH

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>.

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	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 Environmental Management (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 Average 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	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

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			1 elective: Group 1 or 2				
New Brunswick Francophone	Français 10411 4 electives: Group 1 1 elective: Group 1, 2, or 3	Français 10411 Mathématique 30331C Mathématique 30411C 2 of Biologie 53411, Chimie 52411 or Physique 51411 1 elective: Group 1, 2, or 3 or 5	Français 10411 Mathématique 30331C Mathématique 30411C Chimie 52411 1 of Physics 12, Biology 12 or another provincially approved science 1 elective: Group 1 or 2	Français 10411 Mathématique 30331C Mathématique 30411C Chimie 52411 Biologie 53411 or Physique 51411 1 elective - Group 1 or 2	Français 10411 Mathématique 30321B or Mathématique 30331C Chimie 52411 Biologie 53411* 2 electives: Group 1	Français 104112 Mathématique 30331C Mathématique 30411C Physique 51411 Chimie 52411 1 elective: Group 1 or 2	Français 10411 Mathématique 30321B or Mathématique 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 or 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 or Physics 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	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 present PSK4U as a Group 1	English 4U Math MHF4U Physics SPI4U Chemistry SCH4U 1 elective: 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

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			1 elective: Group 1 or 2 See Note #13		elective for Nursing only)		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-	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.	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 Administration program. UNB Saint John Bachelor of Business Administration applicants who do not meet the pre-calculus admission requirements may be

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	degree) program at UNB Fredericton.		Only the first two years of the Bachelor of Science in Engineering program are offered at UNB Saint John.			considered for admission if they have grade 12 Foundations of Math (or equivalent) with a grade of 70% or higher.
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 Mathématique 30311C Mathématique 30411C 1 of Biologie 53421, Physique 51411 or Chimie 52411 1 elective: Group 1 1 elective: Group 1 or 2	Français 10411 Mathématique 30321B or Mathématique 30331C 1 of: Biologie 53411, Chimie 52411, or Physique 51411 2 electives: Group 1 1 elective: Group 1, 2, 3 or 5	Français 10411 Mathématique 30331C Mathématique 30411C Physique 51411 Chimie 52411 1 elective: Group 1, 2 or 4	Français 10411 Mathématique 30331C Mathématique 30411C Physique 51411 Chimie 52411 1 elective: Group 1, 2 or 4	Français 10411 Mathématique 30331C Mathématique 30411C 3 electives: Group 1 (Physics Recommended)	Français 10411 Mathématique 30331C Mathématique 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 12, 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	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, Chemistry 534 or Physics 534	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	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	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

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	1 elective: Group 1 1 elective: Group 1 or 2	2 electives: Group 1 1 elective: Group 1,2,3 or 5	1 elective: Group 1,2 or 4	1 elective: Group 1,2 or 4		1 elective: Group 1, 2 or 3
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

- A pass at the high school level is required for each subject counted for admission (unless otherwise specified).
- 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.
- 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.
- 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.
- Meeting the minimum admission requirement does not guarantee admission to a UNB program.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- (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.
- 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.
- 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

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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 Industriel 67311	Ed Physique 71411
Biology 122	Business Organization & Management 120	Creation Musicale 92421	Electricité 61311	Exercice 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 (Capstone)				
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 Juridiques 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				

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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 2023-2024**A. General Information**

- 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/>.
- 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.
- 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.
- Meeting the minimum admission requirements does not guarantee admission to any program.**
- 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.
- 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.
- Students will normally follow the regulations in the Calendar for the year of their admission.
- 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:

- A complete online Admission Application form with the non-refundable application processing fee.
- 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.
- 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:
 - Complete SAT 2 test in required courses and achieve a minimum of 550 out of 800, or
 - 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
 - Achieve a minimum grade of 4 in an approved Advanced Placement (AP) course.

- 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

- 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.
- 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.
- 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

- 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.

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

F. Admission with Advanced Standing

- The University of New Brunswick welcomes and encourages applications from International Baccalaureate. 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.
- 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.
- 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'.
- 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.
- 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.
- 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

- 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.

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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. Two 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. To participate in the concurrent BA/BEd (Early Years) program, while in the first year of the BA degree (having approximately 10 courses and no more than 20 term courses in total completed), students must apply to the Concurrent BA/BEd program. 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, a statement of intent, as well as have at least a B- average (2.7 CGPA). Applicants must also provide two academic references. Applicants who meet these criteria and submit their application package by the deadline of January 31, may be considered for the next Fall intake.

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. Students who successfully complete UNB's FNGL certificate in good standing with a GPA of 2.0 or above are automatically eligible for a block transfer into the BPhil.
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.

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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 assess 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.

Students who successfully complete UNB's FNGL certificate in good standing with a GPA of 2.0 or above are automatically eligible for a block transfer into the BIS.

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. 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.

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P. 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*.

Q. Application Fraud or Misconduct

- 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,
 - 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
 - The notation "Required to Withdraw" will be a permanent statement on the student's transcript of record.

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. The Registrar shall:
 - Notify the student of the decision and penalty imposed;
 - Provide the student with the basis and reasons for the decision
 - Advise the student of the right to appeal to the appropriate Senate Admissions Committee; and
 - 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.

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.

- Where there is evidence of fraud found in the application process, the University may, at its discretion, share the relevant applicant's personal information with the organization against whom the fraud has been perpetrated.

R. 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:

- Students should apply online at unb.ca/apply by March 31st. Applications received after that date will be considered, provided that space is available.
- Students who for academic or non-academic misconduct reasons are not eligible for readmission to the post-secondary institution at which they last registered will not be considered for admission to UNB.
- 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.

- 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.
- Courses for which credit has been awarded at the transferring institution will be accepted provided that:
 - The courses being considered for credit satisfy the program requirements at the University of New Brunswick.
 - The courses being considered meet the standard of grade required within the program at the University of New Brunswick.
- 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.
- 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).
- 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.
- Current University regulations governing the number of credits that must be taken at the University of New Brunswick apply.
- 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.
- Applicants who have completed prior post-secondary studies outside of Canada or the United States of America are required to submit a WES ICAP Course-by-Course Evaluation as part of their admission package. The Registrar may waive this requirement upon review on a case-by-case basis when warranted.

S. 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.

- Only students who have been admitted to a degree, diploma, or certificate program at the University of New Brunswick may challenge for credit.
 - The result of Challenge examinations will be recorded subsequent to registration.
- 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.
- A student shall not be allowed to challenge for credit more than once in any course.
- 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

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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.

T. 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.

UNIVERSITY-WIDE ACADEMIC REGULATIONS**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, a 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 adresse aux etudiant(e)s Anglophones. Les etudiant(e)s francophones sont egalement encourage(e)s a suivre des cours au niveau approprié dans la discipline de français.

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.

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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 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

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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 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.

Experiential Learning

The University recognizes and values the practice of experiential learning, which offers students the opportunity to practice their disciplinary knowledge in authentic settings and communicate their learning through reflection. To this end, experiential learning courses are defined through their inclusion of academic content, authentic experiences, and reflective practice. Designated courses in each Faculty are identified with (EL).

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 graduate'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'

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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)

9. **EL** Experiential Learning

The University recognizes and values the practice of experiential learning, which offers students the opportunity to practice their disciplinary knowledge in authentic settings and communicate their learning through reflection. The this end, experiential learning courses are defined through their inclusion of content, authentic experiences, and reflective practice. Designated courses in each Faculty are identified with (EL).

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 of 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.

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- 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.

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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 [Section Q, Requirements for a Second Undergraduate Bachelor Degree](#) 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 for 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.

SECTION B: ADMISSION AND UNIVERSITY REGULATIONS

- 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

SECTION B: ADMISSION AND UNIVERSITY REGULATIONS

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 student 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 of 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;

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- 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.

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- 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 by the MPHEC Act. For more information, consult the MPHEC's Privacy Statement at: www.mphed.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).

MN, MN.ANP	Black silk lined with white bordered with peach
MAHSR	Black silk lined with white bordered with powder blue

- 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
BAS	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
BH	Black stuff lined with pale green bordered with white fur
BScE, BScF, BScCS, BCS, BScSwE, BGeom, BScENR, BScEM	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
BEEd	Black stuff lined with grey bordered with white fur
BIS	Black stuff lined with gold bordered with white fur
MA, MAPRE	Black silk lined with crimson
MPhil	Black silk lined with white bordered with light blue
MSc	Black silk lined with white bordered with scarlet
MScE, MEng, MScF, MF, MScFE, MFE, MCS, MACSec, MCSC, MScEM, MEM, MTME	Black silk lined with white bordered with green
MEd	Black silk lined with blue grey bordered with crimson
MASRS, MSES, MScKin	Black silk lined with white bordered with claret
MBA, MBA.JD, MBA.SRM, MQIM	Black silk lined with white bordered with light brown

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.

SECTION C: UNDERGRADUATE FEES AND FINANCIAL INFORMATION

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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 2023-2024 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 2023.
- 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 15, 2023 for Fall Term and January 19, 2024 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 through regular mail to the campus where you are registered:

Fredericton

University of New Brunswick
c/o Student Accounts & Receivable Services
Financial Services
PO Box 4400
Fredericton, NB, E3B 5A3

Saint John

University of New Brunswick
c/o Financial Services/ Student Accounts
PO Box 5050
Saint John, NB, E2L 4L5

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

Fredericton

Student Accounts & Receivable Services
IUC Building, 8 Bailey Drive
Fredericton, N.B.

Hours

Mon - Fri 930 - 415 (Sept 5 - May 17)
Mon - Fri 930 - 345 (May 21 - Sept 3)

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.

- Monthly interest is charged on outstanding balances.
- 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**

Tel: (506) 453-4624
 Fax: (506) 453-4572
 Email: stufees@unb.ca

Saint John

Tel: (506) 648-5543
 Fax: (506) 648-5514
 Email: unbsjreg@unb.ca

Contacts for Financial Aid:**Fredericton**

Tel: (506) 453-4796
 Fax: (506) 453-5020
 Email: finaid@unb.ca
 Website: www.unbf.ca/financialaid/

Saint John

Tel: (506) 648-5543
 Fax: (506) 648-5816
 Email: rsleep@unbsj.ca
 Website: www.unbsj.ca/prospective/finances.html

UNB FREDERICTON and SAINT JOHN Tuition and Fees 2023 - 2024

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 2023-2024 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 22, 2023** for the fall term or **January 26, 2024** 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 22, 2023** for the fall term or **January 26, 2024** for the winter term.

2023-2024 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 15, 2023 for the fall term and on or before January 19, 2024 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

SECTION C: UNDERGRADUATE FEES AND FINANCIAL INFORMATION

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 \$67.00 per term and \$70.00 per term respectively. 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 UNIVERSITY FEES

Payment of Fees: Tuition, residence, and applicable fees, are payable on Sept 15, 2023 in the Fall term and on Jan 19, 2024 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://www.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.

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. T2202As 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 20, 2023 for Fall Term courses

February 23, 2024 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

- 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:
- 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.
- 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 15, 2023 less the appropriate per diem from the 1st day to the date of occupancy. This is due in full before moving into residence.
- 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.
- 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.
- 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

- 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.
- 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 19, 2024. Interest will be added to overdue accounts at the rate of 12.0% per annum or 1.00% per month.
- The date of occupancy will normally be Labour Day. There will be no residence fee adjustments for late arrivals.
- 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.
- 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.
- 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.
- 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, 2023. 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.
- 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: <https://www.canada.ca/en/services/benefits/education/student-aid/grants-loans.html>

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, Toll-Free: 1-800-667-5626, 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:

<https://www.unb.ca/fredericton/studentservices/financial-aid/index.html> or <https://www.unb.ca/saintjohn/studentservices/financial/financial-aid/index.html>, to review resources and services.

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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.

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.

For information about specific awards, please visit <https://www.unb.ca/academics/calendar/undergraduate/current/awards//search/index.html>.

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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.

Wocopsqoltine weci Spiqiqahutuweq/Weli'kwejik Elaqsultiek Program

The Faculty of Education offers a Wocopsqoltine weci Spiqiqahutuweq/Weli'kwejik Elaqsultiek 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 97,000+ 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 and life insurance with Manulife.

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 gymnasiums, 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>.

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

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 two additional cash machines on campus (one located at the Student Union Building and a second 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/student-services/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 enrolls 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 Assault 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
- 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: <http://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 UNB Art Centre showcases rotating exhibits in the East and West Galleries throughout the academic year.
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 McKeegan, Erin Mouré, Catherine Bush, Karen Solie, Patricia

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Young, Gerard Beirne, Fred Stenson, John Barton, Sue Sinclair, Joan Clark, Douglas Glover, Jeremy 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.

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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/student-services/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'Aray 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 hospital 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. - 3:00 p.m.

Phones not answered 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. - 1:00 p.m.

Summer:

Monday to Friday, 8:15 a.m. - 3:30 p.m.

CLOSED DAILY from 11:30 a.m. - 1:00 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>.

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) 453-4955 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 its servicedesk@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 its servicedesk@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!

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For more information on our residences, please visit our webpage at:

<http://www.unb.ca/fredericton/residence>.

Summer Residence is available for UNB students and students from eligible post-secondary institutions. Information on our summer residence program is available at <https://www.unb.ca/fredericton/residence/apply/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 Center, 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, a sundry shop and an ATM.

Student Affairs & Services

Student Affairs & 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 Affairs & 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/student-services/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 given 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.

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

UNB Counselling provides 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: finajdsj@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/student-services/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 itservicedesk@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 able 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

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.

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

SECTION D: ACCOMODATIONS, FACILITIES, AND SERVICES

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 97,000+ 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 and life insurance with Manulife. 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.

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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)
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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:

- 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.
- 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.
- Students may take up to 3 one-credit hour courses of an academic nature during their program.

C. Grade Point Average

- See Section B of this Calendar for detailed regulations on standing and promotion requirements.
- 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.
- 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

- 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 minor in Economics will be awarded to BAM students who achieve a minimum grade of C in:
 - ECON 2013 and ECON 2023, and
 - Any additional 9 ch in upper level Economics courses. (ECON 2103 and ECON 3114 are recommended for 6 of the 9 ch).
 - A minor in Mathematics will be awarded to BAM students who achieve a minimum grade of C in:
 - MATH 1003, MATH 1013, and either MATH 1503 or MATH 2213, and
 - 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.
- 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:

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- 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.

Dean: Dr. Heidi MacDonald

Department of History and Politics

- Everitt, Joanna, BA (Car), MA, PhD (Tor), Prof - 1997
- Fury, Cheryl, BA, MA (UNB), PhD (McM), Prof - 2010
- Goud, Thomas, BA (Calg), MA, PhD (Tor), Assoc Prof - 1994
- Jeffrey, Leslie, BA (Acad), MA (Car), PhD (York), Prof & Chair - 1998
- Lewis, Jon-Paul (J.P.), BA (Waterloo), MA (Guelph), PhD (Carleton), Prof - 2012
- Lindsay, Debra, BA (Sask), MA, PhD (Man), Prof - 1997
- MacDonald, Heidi, BA Hons (MSVU), MA (St. Mary's), PhD (UNB), Prof and Dean - 2019

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
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Website:	http://www.unb.ca/saintjohn/arts/index.html

FACULTY

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- Marquis, Greg, BA (SFX), MA (UNB), PhD (Qu), Prof - 2008
- Munoz-Martinez, Hepzibah, BA (Universidad de Monterrey), MA (York), PhD (York), Assoc Prof - 2012
- Spinney, Erin, BA, MA (UNB), PhD (Sask), Asst Prof - 2022
- Toner, Peter M. BA (St. Thomas (NB)), MA (UNB), PhD (NUI), Professor Emeritus
- Whitney, Robert, BA, MA (U of A), PhD (Queens), 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
- Booluck-Miller, Pooja, BA, MA, PhD (BC), Asst Prof - 2022
- Creelman, David, BA (Acad), MA (UNB), PhD (York), Prof & Chair - 2008
- Eldridge, Patrick, BHum, BA (Carleton), MA, MPhil, PhD (KU Leuven), Assoc Prof - 2018
- Hill, Virginia, MA (Bucharest), MA, PhD (Geneva), Prof - 1990
- Jones, Miriam, BA (Tor), MA, PhD (York), Assoc Prof - 1999
- Littlejohn, Murray, B.Th (USP), BA, MA (Ott), PhD (BC), Teaching Prof - 2008
- Maier, Sarah, BA, MA, PhD (Alta.), Prof - 1998
- Moore, Robert J., BA, MA, PhD (McMaster), Prof - 1998

Department of Social Science

- Doran, Christopher, J., BA (U of York), MA, PhD (Calg), Prof - 1989
- Downes, Daniel, BA (Ott), MA (Car), PhD (McG), Prof - 2001
- Galbo, Joseph, BA (Brooklyn College), MA, PhD (York), Prof - 1997
- Keyes, Beth, BA, BEd, MEd (UNB), MA (Car), PhD (UNB), Sr Teaching Assoc - 2014
- LeBlanc Haley, Tobin, BA, MA (UNB), PhD (York), Asst Prof - 2022
- Madeley, June, BA (Regina), MA (Dal), PhD (McM), Assoc Prof & Chair - 2021
- 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), CRC & Assoc 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 additional term-course in COMS at the lower level

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 Communication Studies, OR
COMS 4101 Advanced Topics in Communication 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. A list of current offerings is posted and circulated each spring to students in COMS programs. 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

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

SOCI 2251 Film and Society

AND

One term-course in COMS at the lower level

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 Communication Studies; OR

COMS 4101 Advanced Topics in Communication 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.
3. 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 in COMS at the lower level

Upper Level: 3 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.

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 Reconciliation

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 Global 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, PSYC 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, PSYC 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 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

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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; <https://www.unb.ca> - for up-to-date developments, including an on-line 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 or a work visa, are eligible for teacher certification in the Province of New Brunswick.

Concurrent Program

Students in the trans program must fulfill the following requirements.

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 six 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.

b. Teachable subjects include: Biology, Business Administration, Chemistry, Classics, Commerce, Computer Science, Communication Studies, Economics, English, French, Geography, History, Languages, Mathematics, Music, Physical Education, Physics, Political Science.

To be eligible to teach 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

- Letter grades are assigned in accordance with University regulations.
- A grade of B- shall meet the requirements for Bachelor of Education courses unless otherwise stated in the Calendar.
- In course offerings of other Faculties/Departments, students must meet the prerequisite requirements of that Faculty/Department.
- A grade of C shall be the minimum acceptable grade in courses taken to meet the Teachable requirements for the Bachelor of Education degree.
- 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.
- 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

- The normal course load for a concurrent BEd student is 12 term-courses per academic year.
- 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

- BEd degrees are awarded in divisions as stated in the University Regulations.
- 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.

- 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.)
- 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.
- Before entering the 15 week Internship, *Prerequisites* must be met (see course: ED 5040).
- 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.
- Students are responsible for all travel and living expenses incurred.
- Re-registration
 - 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.

Admission Procedures

- Students apply for entry to the Bachelor of Arts degree program upon completion of their high school program.
- 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.
- 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)

- 20 term-courses from the Faculty of Education.
- 40 term-courses approved by the Faculty of Arts of which 4 term-courses of specified Education credits may be used as Arts electives.
- 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:

- One of MATH 2203 or MATH 3343;
- 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).

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	Work 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:

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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 development 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 (3000-4000 level) courses in English until they have completed three term-courses at the lower level (1000-2000 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 1101 and ENGL 1102.

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 1101 and ENGL 1102.) 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.

Students will design their Honours Program in consultation with a member of the English Discipline, and with the Honours Coordinator; they 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 3104, ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, or ENGL 3109)
- c. Restoration and 18th Century (ENGL 3203, ENGL 3204, ENGL 3205, or ENGL 3206)
- d. 19th Century (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, or ENGL 3314)
- e. Modern British/American (ENGL 3405, ENGL 3515, ENGL 3517, or ENGL 3518)
- f. Canadian (ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, ENGL 3509, or ENGL 3816)

Literary Theory (ENGL 3601) is strongly recommended for students intending to pursue graduate study.

Electives may be chosen from any of the above areas and from the following list: ENGL 3611, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3721, ENGL 3722, ENGL 3725, ENGL 3802, ENGL 3922, ENGL 3927. 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 1101 and ENGL 1102, 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 3104, ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, ENGL 3109, ENGL 3203, ENGL 3204, ENGL 3205, ENGL 3206, or ENGL 3817)
- b. Post-1800 (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, ENGL 3314, ENGL 3402, ENGL 3405, ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, ENGL 3509, ENGL 3512, ENGL 3515,

<https://www.unb.ca/academics/calendar/undergraduate/current/saint-john-courses/english/engl-3719.html> 3816 or 3817)

Electives may be chosen from both of the above groups, and from the following list: ENGL 3601, ENGL 3611, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3721, ENGL 3722, ENGL 3725, ENGL 3802, ENGL 3922, ENGL 3927. 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 two-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.

Major

Students should 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 1101 and ENGL 1102). A minimum of 3 term-courses are required from each of the following two groups, for a total of 6 term-courses:

- Pre-1800 (ENGL 3009, ENGL 3104, ENGL 3105, ENGL 3106, ENGL 3107, ENGL 3108, ENGL 3109, ENGL 3203, ENGL 3204, ENGL 3205, ENGL 3206, or ENGL 3817)
- Post-1800 (ENGL 3302, ENGL 3304, ENGL 3311, ENGL 3312, ENGL 3313, ENGL 3314, ENGL 3402, ENGL 3405, ENGL 3502, ENGL 3504, ENGL 3505, ENGL 3506, ENGL 3507, ENGL 3508, ENGL 3509, ENGL 3512, or ENGL 3818)

Electives may be chosen from both of these groups, as well as from the following list: ENGL 3601, ENGL 3611, ENGL 3709, ENGL 3713, ENGL 3714, ENGL 3718, ENGL 3721, ENGL 3722, ENGL 3725, ENGL 3802, ENGL 3816, ENGL 3927, or 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 1101 and ENGL 1102.

English Major with a Concentration in Drama

Students wishing to concentrate in drama may elect the Single or Double Majors option in English (Drama). Students who elect to take the Drama option will organize their programs according to the standard requirements for Majors or Double 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, ENGL 3902, at least one Shakespeare course, and at least one 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 1101 and ENGL 1102). A grade of C or better is required in all courses counting towards the minor.

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, FR 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, 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 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:

- Participate with ease in conversation
- Can participate adequately in conversation albeit with a certain degree of hesitancy
- Can make themselves understood in conversation

Listening Comprehension:

- Can understand lectures in a job-related context and radio and TV news and programs which interest them
- Can understand lectures on non-technical subjects and group conversations

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- 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.

General Information - Course Numbering and Prerequisites:

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 average of 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 degree. 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:

- MATH 1003, MATH 1013, MATH 1503, MATH 2513, MATH 2523, MATH 2203
- MATH 3213, MATH 3713, MATH 3733, STAT 3793, STAT 4793
- At least five upper level mathematics term-courses. At most two (6 ch) of 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 two term courses (6 ch).

2. In addition, one of CS 1003, CMPE 1003 or CS 1073 is required.

NOTE:

(i) MATH 2633 and MATH 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.

(ii) 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. The Minor should be declared at the same time as the student's Major.

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:

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- Four term-courses at the lower level (1000-2000 level)
- At least eight term-courses at the upper level. (3000-4000 level)

A double Major in Philosophy will consist of at least ten term-courses in Philosophy, of which no more than four term-courses are at the lower level and at least six term-courses at the upper level, all passed with a grade of C or better.

Minor

The Minor in Philosophy will consist of a maximum of four term-courses in Philosophy at the lower level 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 to be counted towards the minor.

POLITICS

Major

Students choosing the discipline major must complete a minimum of 14 term-courses in Politics, as follows:

- POLS 1201, and POLS 1301;
- Two of the following: POLS 2201/POLS 2301/POLS 2401/POLS 2601;
- One of the following: POLS 3401/POLS 3101/POLS 3603/POLS 3425;
- 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:

- 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;
- 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.
- 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:

- POLS 1201 and POLS 1301;
- Two of the following: POLS 2201/POLS 2301/POLS 2401/POLS 2601;
- One of the following: POLS 3401/POLS 3101/POLS 3603/POLS 3425;
- 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, PSYC 4733, 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 have 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 10 term-courses are compulsory: PSYC 1003; PSYC 1004; PSYC 2102; PSYC 2901 (or equivalent); PSYC 3913 (or equivalent); PSYC 4053; one of PSYC 4021, PSYC 4111, PSYC 4121, PSYC 4122, or PSYC 4201; PSYC 4142; PSYC 4143; and PSYC 4145.

An additional 9 term-courses derived from a selection of 3 term-courses from each of the following 3 groups is necessary. One of PSYC 4021, PSYC 4111, PSYC 4121, PSYC 4122, or PSYC 4201 can also be counted towards one of these 3 groups.

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 Developmental 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

[NOTE: Admission to Certificate in Mental Health Studies is suspended]

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:

- 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.
- Each student entering the Certificate program on a full-time basis must have the prior approval of the Faculty of Arts.
- 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.
- 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.
- 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 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 impacts the elderly in terms of health care, pensions, housing facilities, ethics and end-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.

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 gerontology 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

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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.

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 Bayar), Professor - 2005
- Doiron, Daniel, BScEE (UNB), SMMoT (MIT), Senior Teaching Associate - 2003
- 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), 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

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 18 term-courses, as specified below.

- MATH 1003, MATH 1013, MATH 1503, MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793
- MATH 3713, MATH 3733, STAT 3793, STAT 4793
- At least four upper level term-courses in Statistics, in addition to STAT 3793 and STAT 4793
- CS 1003 or CMPE 1003 or CS 1073
- MATH 3414 (or CS 3113 or equivalent)

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 should be declared at the same time as the Major.

- Oyet, Mercy, BSc (IMSU), MBA (MUN), PhD (MUN), Assistant Professor - 2018
- Rinehart, Shelley, BA, MA (UNB), PhD (U of Oklahoma), Professor - 1988
- 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

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. 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.

V. 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.

VI. 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.

VII. 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 E 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.

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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

- Students in the BBA program may choose to complete a double major in any two of the following disciplines: Human Resources Management, Accounting, Digital Business Design, Marketing, Economics and French Communications and Culture. Students pursuing 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.
- 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.
- Students should note that not all elective or optional courses are offered each year. The Course Catalogue should be consulted for current offerings.
- 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.
- 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 12ch of approved electives in the area of interest. Approved courses for each subject of concentration are as follows:

Accounting

- BA 3235 Intermediate Accounting I*
- BA 3236 Intermediate Accounting II*
- BA 3224 Accounting for Manager III*
- And one of:
 - BA 4207 Current Accounting Issues
 - BA 4221 Advanced Management Accounting
 - BA 4223 Accounting Information Systems
 - BA 4229 Advanced Financial Accounting I*
 - BA 4231 Advanced Financial Accounting II*
 - BA 4237 Income Taxation*
 - BA 4238 Auditing*
 - BA 4242 Accounting Theory
 - BA 4203 - Independent Study - Accounting
 - Or other course(s) as approved by the Faculty of Business

Digital Business Design

- BA 2123 Introduction to Digital Business
- BA 2663 Technology Trends in Digital Business
- And at least two of the following:
 - BA 2611 Business Data Visualization
 - BA 3131 Creative Problem Solving
 - BA 3133 Business Model Innovation
 - BA 3135 Design & Systems Thinking
 - BA 3136 Customer-Focused Innovation
 - BA 3305 Digital Marketing
 - BA 3718 Legal, Privacy & Security Issues on the Internet
 - BA 4108 Management of New Enterprise
 - BA 4223 Accounting Information Systems
 - BA 4866 Management of Technology
 - Or other course(s) as approved by the Faculty of Business

Finance

- 6 ch of approved Finance Electives
- 6 ch of approved Finance or Non-Finance Electives

Available Finance electives are:

- BA 3421 Personal Financial Planning
- BA 3426 Corporate Finance*
- BA 4437 Investment Analysis and Portfolio Management
- BA 4455 Derivatives: Options and Futures

Approved non-Finance electives are:

- ECON 2103 Financial Institutions and Markets
- ECON 3114 International Financial Institutions and Markets
- ECON 3412 International Macroeconomics and Finance
- or other course(s) as approved by the Faculty of Business

Human Resources Management

At least four of the following electives:

- BA 2758 Employment Law
- BA 3129 Business Research Methods
- BA 3813 Introduction to Industrial Relations
- BA 4813 Negotiations and Dispute Resolutions
- BA 4853 Recruitment and Selection
- BA 4854 Training and Development
- BA 4855 Compensation Structure Development
- BA 4856 Evaluating and Rewarding Employee Performance
- BA 4857 Management of Occupational Health and Employee Wellness
- BA 4866 Management of Technology
- Or other course(s) as approved by the Faculty of Business

Marketing

- BA 3129 Business Research Methods
- BA 3328 Consumer Behaviour
- And two of:
 - BA 3305 Digital Marketing
 - BA 3339 Marketing Communications
 - BA 3371 Marketing of Services
 - BA 4107 Studies in Small Business
 - BA 4334 Public and Non-profit Marketing
 - BA 4398 International Marketing
 - Or other course(s) as approved by the Faculty of Business

VIII. 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.

IX. Business Administration Curriculum and Degree Requirements

- 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.
- 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 Associate Dean of the Faculty of Business, take a maximum of six courses in a given term.
- Candidates for the degree must successfully complete the following credit hours: a) 57 core, b) 18 Business/Economics 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/Economics 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/Economics”. An option course is an approved course chosen by the student from any approved discipline.

Electives:

- 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
- Economics: All courses prefixed with ECON.

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
BA/ECON Electives or Option Courses ** - 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
BA/ECON Elective or Option Courses** - 3 ch

THIRD YEAR

Fall Term

BA 3425 Managerial Finance
BA/ECON 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
BA/ECON Electives or Option Courses - 3 ch

Fourth Year

Fall Term

BA 4101 Competitive Strategy
BA/ECON Electives or Option Courses - 12 ch

Winter Term

BA/ECON 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.

X. 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:

- 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.
- In order to earn the major in Economics, BBA students must complete the following:
 - earn a minimum grade of C in the following compulsory courses: ECON 2013, 2023, 3013 and 3023; and
 - 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:

Program:	Maximum substitute courses permitted:
Bachelor of Business Administration with a Major in Economics	2 courses
Bachelor of Arts Honours in Economics	3 courses
Bachelor of Arts Major in Economics	3 courses
Bachelor of Arts Double Major in Economics	3 courses
Bachelor of Science in Economics	2 courses
Bachelor of Science Mathematics and Economics Options	3 courses

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.

XI. 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:

- ECON 2013 and ECON 2023 and

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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.

XII. 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:

- 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.
- 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.
 - 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.

XIII. 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.

XIV. 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.

XV. 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.

- 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.
- In order to earn the major in Human Resource Management, BBA students must:
 - Maintain a minimum 3.0 (B) grade point average in the 24 ch of courses (ii, iii), and
 - Earn a minimum grade of C in the following compulsory courses: BA 2504, 2758, 2858, 3129, 3813 and 4898; and
 - 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.

XVI. 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.

- 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.
- In order to earn the major in Accounting, BBA students must in addition to the general requirements of the BBA degree:
 - 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
 - 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;

- 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.

XVII. 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.

- 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.
- In order to earn the major in Digital Business Design, BBA students must:
 - Earn a minimum grade of C in the following compulsory courses: BA 2123, BA 2663, BA 3131, BA 3133, BA 3135 and BA 3136.
 - 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.

XVIII. 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.

- Students electing to major in Marketing should declare the major by the beginning of their third year. All courses must be confirmed by Faculty of Business advisor and approved by Faculty of Business to comply with the Marketing Major requirements.
 - In order to earn the major in Marketing, BBA students must:
 - maintain a minimum 3.0 (B) grade point average in the 21ch of courses (ii, iii), and
 - earn a grade of C or higher in three compulsory courses: BA3305, BA 3328, BA 3129; and
 - earn a grade of C or higher in four of the following business and non-business elective courses. A minimum of two courses must be from the business electives:
- Business electives:** BA 2501, BA 3123, BA 3134, BA 3301, BA 3339, BA 3371, BA2611, 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.

Non-business electives: COMS 2119, FR 3203, PHIL 3153, PSYC 2693, PSYC 3383, PSYC 3401, PSYC 3412, PSYC 3493, PSYC 3503, SOCI 3214, SOCI 3517 or other course(s) as approved by the Faculty of Business.

XIX. 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:

- 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.

XX. 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.

XXI. 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 below.

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
BA/ECON 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
BA/ECON 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
BA/ECON 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
BA/ECON Electives or Option Courses - 15 ch

Winter Term (January - April)

BA/ECON 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 [Section C](#) 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.

XXII. Certificate Programs in Business Administration

General Regulations

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

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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.

- The following regulations apply to the certificate programs in business:
 - 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.
 - 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.
- Each student entering a certificate program on a full-time basis must have the prior approval of the Faculty of Business.
- 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.
- 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.
- 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).
- The following regulations apply to the certificate programs in business, including the Business Administration Certificate Level I, Level II or the Certificate in Accounting. Prerequisites include a high school diploma or permission from the Faculty. Students would also benefit from having post-secondary preparatory work. Admission information concerning the Certificate in Digital Business Design, the Certificate in Human Resource Management, Certificate in Community Leadership, Certificate in Economics, Certificate in Financial Markets and the Certificate in Nursing Leadership and Management can be found at <http://www.unb.ca/academics/calendar/undergraduate/current/saintjohnprograms/bachelorofbusinessadministration/xxi.-certificate-programs-in-business-administration.html>. It is important to note that students in these certificate programs will undertake university-level study and assignments demanded in degree-credit courses. For example, some courses such as Finance and Business Decision Analysis require at least a background knowledge of high school mathematics.
- 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, students applying for the certificate programs in business must have a high school diploma and permission from the Faculty. Students would also benefit from having post-secondary preparatory course work. It is also important that applicants have a strong desire and willingness to engage in learning at a university level*. (Note: Student services and study resources are available to assist students in these programs).

Business Administration Certificate Level I

Requirements:

A Business Administration Certificate Level I will be awarded to individuals who:

- achieve a cumulative grade point average of at least 2.0 over the 30 credit hours required, and
- 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
	BA/ECON 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:

- achieve a cumulative grade point average of at least 2.0 over the 60 credit hours required, and
- 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:

- achieve a cumulative grade point average of at least 2.0 over the 33 credit hours required, and
- 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

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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 Innovation	3 ch
BA 3135	Design & Systems 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	Digital Marketing	
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:

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- 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

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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
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Email:	nursingsi@unb.ca
Website:	http://www.unb.ca/saintjohn/sase/dept/nhs/index.html

FACULTY

Chair: Hamilton, Catherine

- Banks, Angela, BN, MN, Diploma in University Teaching (UNB), CNA Certification Medical-Surgical Nursing, Associate Teaching Professor - 2016
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Jarislowky Chair in Interprofessional Patient-Centred Care, Professor, Director of the Centre for Research in Integrated Care - 2010
- Dupont, Diana, BN, MN, Diploma in University Teaching (UNB), Certification Medical-Surgical Nursing, Associate Teaching Professor - 2018
- Edwards, Rosann, BA, BSCN, MSCN, PhD (U of Ottawa), Assistant Professor - 2020
- Furlong, Karen, RN Dip (SJSN), BN, MN, PhD, Diploma in University Teaching (UNB), Teaching Professor - 2000
- Gregg, Emily, BN, MN (UNB), PhD (Queens University), Assistant Teaching Professor - 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), Diploma in University Teaching (UNB), Associate Teaching Professor - 2019
- Keeping-Burke, Lisa, BN, MN (MUN), PhD (McGill), Associate Professor, Associate Dean of Health Research - 2012
- Kinney, Erika, BN (UNB), MN (AU), CNA Certification-Critical Care, Assistant Teaching Professor - 2022
- Mawhinney, Kathleen BN, MN, Diploma in University Teaching (UNB), Teaching Professor - 2010
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN, PhD, CNA Certification Gerontology, Diploma in University Teaching (UNB), Professor - 2000
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA Certification Perinatal Nursing, Teaching Professor - 2002
- Shamputa, Isidore Chola, BSc (UNZA), MSc, PhD (VUB), Visiting Postdoctoral Fellow (NIH), BScN (Dal), 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), Associate Teaching Professor - 2019
- Waycott, Loretta, BA (STU), BN (UNB), MN (Athabasca University), Diploma in University Teaching (UNB), Associate Teaching Professor - 2019

- Wilbur, Kimberly, RN (Bathurst School of Nursing), BN, MN, Diploma in University Teaching (UNB), Lecturer - 2022

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: (Partner: 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:

- Minimum TOEFL score on a paper-based test of 600.
- Minimum CanTEST scores of 5.0 on reading and listening, and 4.5 on writing.
- 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 recommended) (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)

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:

- INDIG 1002
- BA 1216, BA 2504, BA 2758, BA 2858
- PSYC 2401, PSYC 3293, PSYC 3323, PSYC 3362, PSYC 3343, PSYC 3725
- SOCI 1001, SOCI 2376
- POLS 1201

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 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 - Health 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)

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- 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)
- 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)

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 meet 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 prerequisites for the required courses and required electives.

1. 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)
NOTE: Students who do not have high school Chemistry should take CHEM 1831 + CHEM 1046 and CHEM 1872 + CHEM 1877
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 Colonialism and Indigenous Peoples in America (3 ch) OR
INDG 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. The program requires a total of 126ch in Required Courses, Required Electives, and General Electives.

REQUIRED COURSES (24ch)

HEAL 3104 Introduction to Epidemiology or HEAL 3004 Implementation Science
 HIST 1701 The Medical Experience
One of: COMS 1002 Media, Truth, and the Social Sphere, COMS 2001, Transformations in Media, OR HUM 1021 Effective Writing I
 HIST 2701 Canadian Healthcare OR HIST 3555 History of the Atlantic World
One of: POLS 1201 Canadian Politics OR POLS 1301 Global Political Studies
One of: POLS 3685 Politics of Food, OR POLS 3632 Politics and the City
One of: PSYC 3033 Health Psychology, PSYC 3323 Community Psychology and Mental Health, OR PSYC 3416 Psychology of Happiness
One of: SOCI 3325 The Sociology of Disability, SOCI 3376 Mental Health, Addictions & Wellbeing, or SOCI 4026 Social Policy in Canada

REQUIRED ELECTIVES (18ch):

Students must complete 18ch from the two groups of courses below. It is recommended to select 3 courses (9 credit hours) from Group 1 and 3 courses (9ch) from Group 2, unless the student is pursuing a Specialization as noted below.

Specializations in Society and Health

Within the BH in Society and Health major, students can specialize in two areas:

Students pursuing the Specialization in Health Policy in Practice must complete all 18ch of Required Electives from Group 1

Students pursuing the Specialization in Health Complexities in Modern Life must complete all 18ch of Required Electives from Group 2

Note: Courses cannot be used as both a required course and a required elective

Group 1: Health Policy in Practice

ECON 3813 Health Economics (3ch)
 HEAL 3004 Implementation Science (3ch)
 HEAL 3005 Global Child Health (3ch)
 HEAL 4004 Honours Research Seminar (3ch)
 HEAL 4007 Experiences in Health (3ch)
 HEAL 4301 Advanced Topics in Society and Health (3ch)
 POLS 2301 Politics of the Developing World (3ch)
 POLS 3101 Constitutional Politics in Canada (3ch)
 POLS 3205 Canadian Provincial Politics (3ch)
 POLS 3231 Representation and Recognition in Canadian Politics (3ch)
 POLS 3261 Canadian Federalism (3ch)
 POLS 3291 First Nations Govt in Canada (3ch)
 POLS 3501 Public Policy (3ch)
 POLS 3632 Politics and the City (3ch)
 POLS 3683 Human Rights (3ch)
 POLS 3685 Politics of Food (3ch)
 PSYC 4233 Program Evaluation (3ch)
 SOCI 4026 Social Policy in Canada (3ch)

Group 2: Health Complexities in Modern Life

ENGL 3816 Studies in Indigenous Literature (3ch)
 HEAL 3004 Implementation Science (3ch)
 HEAL 4004 Honours Research Seminar (3ch)
 HEAL 4007 Experiences in Health (3ch)
 HEAL 4301 Advanced Topics in Society and Health (3ch)
 HIST 4381 The Family and the State in North America (3ch)
 HIST 4945 Women, Science and Medicine (3ch)
 HIST 4337 Alcohol, Drugs and Tobacco in North America (3ch)
 PHIL 3124 Contemporary Moral Problems (3ch)
 PHIL 3033 Health Care Ethics (3ch)
 PSYC 3033 Health Psychology (3ch)
 PSYC 3323 Community Psychology and Mental Health (3ch)
 PSYC 3416 Psychology of Happiness (3ch)
 SOCI 2008 Sociological Approaches for Understanding Indigenous Experience (3ch)
 SOCI 2611 Anti-criminology (3ch)
 SOCI 3614 Anti-criminology II (3ch)
 SOCI 3325 The Sociology of Disability (3ch)

SOCI 3376 Mental Health, Addictions & Wellbeing (3ch)

SOCI 3701 Sociology of Urban Life (3ch)

GENERAL ELECTIVES (please note prerequisites may apply):

A minimum of 18ch of General Electives

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 Principles 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 Introduction to Macroeconomics (3 ch)
 ECON 3813 Introduction to Health Economics (3 ch)

- Required elective courses** (please note prerequisites 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 Operations 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 3004 Implementation Science (3ch)
 HEAL 3104 Introduction to Epidemiology (3ch)
 HEAL 4004 Honours Research Seminar (3 ch)
 HEAL 4007 Experiences in Health (3ch)
 HEAL 4501 Advanced 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 128 credit hours.

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- **Required courses for the major (24 ch)** (please note prerequisites may apply)
 BIOL 3853 Introduction to Pathophysiology (3 ch)
 CHEM 2421 Organic Chemistry I (3 ch)
 HEAL 3104 Introduction to Epidemiology (3ch) or HEAL 3003 Implementation Science (3ch)
 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 that 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 1411 Anatomy and Physiology I (3 ch)
 BIOL 1412 Anatomy and Physiology II (3 ch)
 BIOL 1431 Human Anatomy and Physiology Lab I (1 ch)
 BIOL 1432 Human Anatomy and Physiology Lab II (1 ch)
 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 2155/CHEM 2455 Biopharmaceutics (3 ch)
 HEAL/BIOL 3101 Molecular and Cellular Basis of Cancer (3 ch)
 HEAL 3102/PSYC 3724 Clinical Neuroscience (3 ch)
 HEAL 3103 The Neurobiology of Learning (3 ch)
 HEAL 4004 Honours Research Seminar (3 ch)
 HEAL 4007 Experiences in Health (3 ch)
 HEAL 4101 Advanced Topics in Biomedical Science (3 ch)
 HEAL 4102/PSYC 4712 Neuroplasticity (3 ch)
 HEAL 4103 Epilepsy and Quality of Life (3 ch)
 HEAL 4104/PSYC 4734 Applied Neuroscience (3 ch)
 HEAL 4105 Cell Signalling (3 ch)
 PSYC 3383 Perception (3 ch)
 PSYC 3632 Motivation (3 ch)
 PSYC 3723 Introduction to Human Neuropsychology (3 ch)
 PSYC 3725 The Dementias (3 ch)
 PSYC 3752 Drugs and Behaviour (3 ch)
 PSYC 4021 Cognitive and Psychophysiological Research (3 ch)
 PSYC 4111 Conducting Research Studies (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 that 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

The Honours Program in Health will be available to all Bachelor of Health (BH) students who meet the honours entrance requirements. Students in the honours program will work closely with a research supervisor to develop a research proposal (Fall term) and conduct independent research (Winter term). In addition, students will be required to complete the Honours Seminar in Health (Fall term). The honours seminar will focus on research methodology, scientific writing, research ethics (animal and human), oral and poster presentation development, and leadership skill development. All honours students will work in consultation with an honours supervisory committee that will include their primary supervisor, a second reader, and the BH honours coordinator. To meet the

interdisciplinary goals of the BH, the primary supervisor and second reader should not have the same research expertise (i.e., be primarily affiliated with the same BH majors).

Students are responsible for securing a research supervisor. Updated lists of potential supervisors and their contact information will be posted on the BH website. Students can select an honours supervisor and complete an honours research project focused within their major area of study or with an interdisciplinary approach to health. BH honours students will receive their honours degree in their major area: Biomedical Sciences and Health, Management and Health, or Society and Health.

To apply to the honours program, students must have a cumulative grade point average of at least 3.3 at the end of the third year (minimum of 90ch). Please note that meeting the minimum requirement does 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 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. Honours students will complete HEAL 4004 (honours research seminar), HEAL 4005 (designing a research proposal), and HEAL 4006 (honours thesis). To graduate with honours, a cumulative GPA of 3.0 must be maintained.

Bachelor of Health honours students are required to complete all requirements for the Bachelor of Health. For a First Class Honours designation, a cumulative grade point average of 3.6 is required. Enrolment in the honours program is limited and students must submit a completed application to the Bachelor of Health coordinator at the end of their third year of study. The application package will include a completed application form and a personal statement of research interests and career goals.

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 of 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

- 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

- 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.
- Three credit hours (3 ch) from either MATH 3753 or MATH 3903.
- 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.
- At least 3 ch selected from disciplines in Arts or Business to be approved by faculty advisor.

Decision and Business Management Specialization

BACHELOR OF NURSING

Department of Nursing & Health Sciences

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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
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Email:	nursingsi@unbsj.ca
Website:	http://www.unb.ca/saintjohn/sase/dept/nhs/index.html

FACULTY

Chair: Hamilton, Catherine

- Banks, Angela, BN, MN, Diploma in University Teaching (UNB), CNA Certification Medical-Surgical Nursing, Associate Teaching Professor - 2016
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Jarislowsky Chair in Interprofessional Patient-Centred Care, Professor, Director of the Centre for Research in Integrated Care - 2010
- Dupont, Diana, BN, MN, Diploma in University Teaching (UNB), CNA Certification Medical-Surgical Nursing, Associate Teaching Professor - 2018
- Edwards, Rosann, BA, BSCN, MSCN, PhD (U of Ottawa), Assistant Professor - 2020
- Furlong, Karen, RN Dip (SJSN), BN, MN, PhD, Diploma University Teaching (UNB), Teaching Professor - 2000
- Gregg, Emily, BN (UNB), MN (UNB), PhD (c) (Queen's University), Assistant Teaching Professor - 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), Associate Teaching Professor - 2019
- Keeping-Burke, Lisa, BN, MN (MUN), PhD (McG), Associate Professor, Associate Dean of Health Research - 2012
- Kinney, Erika, BN (UNB), MN (AU), CNA Certification - Critical Care, Assistant Teaching Professor - 2022
- Mawhinney, Kathleen, BN, MN, Diploma in University Teaching (UNB), Teaching Professor - 2010
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN, PhD, CNA Certification Gerontology, Diploma in University Teaching (UNB), Professor - 2000
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA Certification Perinatal Nursing, Teaching Professor - 2002
- Shamputa, Isidore 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), Associate Teaching Professor - 2019
- Waycott, Loretta, BA (STU), BN (UNB), MN (Athabasca University), Diploma in University Teaching (UNB), Associate Teaching Professor - 2019
- Wilbur, Kimberly, RN (Bathurst School of Nursing), BN, MN, Diploma in University Teaching (UNB), Lecturer - 2022

Program Goal

The goal of the Nursing Programs at UNB Saint John is to educate caring

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- At least 12 ch of courses selected from disciplines in Arts, Business or Science, Applied Science and Engineering to be approved by faculty advisor.
- 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

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 can occur any day of the week. 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.

CASPer Test

Admission decisions are based on the applicant's admission average or Grade Point Average (GPA) (60% weight) and the CASPer score (40% weight). All applicants to UNB's Nursing programs are required to complete the CASPer test, an online Situational Judgement Assessment, as part of the application process. This includes applicants to the four-

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

year Bachelor of Nursing on both campuses; the LPN to BN Pathway, and the Bachelor of Nursing Accelerated Program through UNB Fredericton, and the LPN Bridge program through UNB Saint John. An applicant may write the CASPer test once per year. Applicants who have taken the test in previous years will be required to re-take it if reapplying for admission.

Nutsihpiluwewick Admission Pathway

The Faculty of Nursing, Fredericton campus and Moncton site, and the Department of Nursing and Health Sciences, UNB Saint John follow the Nutsihpiluwewick (Fredericton) and Indigenous Admissions Pathway (Saint John).

UNB recognizes and respectfully acknowledges that the land on which our campuses are located is the traditional unsundered and unceded traditional lands of the Wolastoqiyik and Mi'kmaq Peoples. This territory is covered by the "Treaties of Peace and Friendship" which the Wolastoqiyik, Mi'kmaq, and Peskotomuhkati Peoples first signed with the British Crown in 1725. The treaties did not deal with the surrender of lands and resources but in fact recognized Wolastoqiyik, Mi'kmaq, and Peskotomuhkati title and established the rules for what was going to be an ongoing relationship between nations. UNB's Faculty of Nursing and Department of Nursing and Health Sciences UNB Saint John welcomes applications from Indigenous students and is committed to the decolonization of admissions processes and the fulfillment of the Truth and Reconciliation Committee's Calls to Action to bridge the educational attainment gap and student success rates, increase the number of Indigenous nurses, and to do so in a way that recognizes the value of Indigenous knowledge.

The Mi'kmaq-Wolastoqey Centre, Nutsihpiluwewick (Healing Clan), the Faculty of Nursing (UNBF) and the Department of Nursing and Health Sciences (UNBSJ) have identified an admissions pathway for applicants with Indigenous ancestry (First Nation, Inuit, and Métis). These applicants are invited to participate in an Indigenous student enrolment strategy - the Nutsihpiluwewick (Indigenous) Admission Pathway - which aims to increase the number of Indigenous nurses in a culturally responsive way, a process that has been developed with the heart and spirit of Indigenous ways of knowing and being. Applicants who choose this pathway will undergo a holistic review by an Indigenous Selection Committee. Indigenous applicants are required to meet the minimum application requirements for all UNB Nursing Programs and apply using the general application form. Applicants who choose the Nutsihpiluwewick Admission Pathway will not have the CASPer score factored into their admission process.

For additional information about this Pathway please contact Nutsihpiluwewick Director at for UNB Fredericton and Moncton. Contact the Indigenous Advisor at UNBSJ (unbsjreg@unb.ca). Indigenous applicants who do not meet minimum admission requirements are encouraged to apply to UNB's Mi'kmaq-Wolastoqey Centre's Wocopsqoltine weci Spiqiyahutuweq / W'i'ikwejik Elaqsultiek program.

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:

- Minimum TOEFL score on a paper-based test of 600.
- Minimum CanTEST scores of 5.0 on reading and listening, and 4.5 on writing.
- 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 accessed through the Nurses Association of New Brunswick website.

- 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.

- 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
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Students must complete the program within 6 years of enrolment.

Course Transfers

Potential courses for transfer to the BN or the LPN-Bridge 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 126 ch. The following is the recommended sequence of required courses:

(See Section F of the Calendar for course descriptions)

Year I

Term 1: NURS 1009 (1 ch); NURS 1011 (2 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 1273 (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 2132 (3 ch)

Term 2: NURS 2063 (4 ch); NURS 2145 (3 ch); NURS 2189 (4 ch); STAT 2263 (3 ch); BIOL 2852 (3 ch); Open Elective* (3 ch).

Year III

Term 1: NURS 3064 (3 ch); NURS 3067 (4 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 (5 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 (ANBPLN) in good standing, and (2) are a graduate of an 18-month or two-year Licensed Practical Nursing college 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 1009 (1 ch) - Scholarly Writing for Health Disciplines

NURS 2011 (2 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@unb.ca
Website:	https://www.unb.ca/saintjohn/sase/

FACULTY

Dean: Dr. Michael van Zyll de Jong

Department of Biological Sciences

- Backman, Philip J., BSc (Dal), MSc (UNB), Teaching Prof - 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
- D'Aloia, Cassidy, Adjunct Prof - 2022
- Davies, Kimberley, BSc (Victoria), PhD (Dalhousie), Assoc Prof - 2021
- Dowding, Barbara, BSc, MSc (MUN), Teaching Prof - 2001
- Frego, Katherine, BSc (Winn), MSc (Manit), PhD (Tor), Prof Emerita - 2017
- Goodwin, Clare, Adjunct Prof - 2017
- Granger, Aaron, BSc, PhD (UNB), DUT, Assoc Teaching Prof - 2020
- Gray, Christopher, BSc (Univ College of Wales, Bangor), MSc Zoology, PhD Chemistry (Rhodes University, South Africa), Assoc Prof - 2016
- Houlahan, Jeff, BA (Carl), BSc, PhD (Ott), Prof & Chair - 2003
- Hunt, Heather, BSc, PhD (Dal), Prof and Chair - 2012
- Johnson, John, BSc, MSc, PhD (UNB), Prof Emeritus - 2019
- Kayser, Margaret, BSc, MSc, PhD (Ott), Honorary Research Assoc, Prof Emerita - 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 Emeritus - 2020
- Major, Heather, BSc (Dal), MSc (MUN), PhD (Simon Fraser), Assoc Prof - 2013
- McAlpine, Donald, Adjunct Prof - 2006
- McKenna, Myriam, BSc, MSc (Waterloo), PhD (Ottawa (c)), Asst Teaching Prof - 2022
- Page, Fred, Adjunct Prof - 2009
- Pavey, Scott, BSc (Colorado), MSc (Alaska), PhD (Simon Fraser), CRC and 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 - 2019
- 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), Teaching Prof - 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), Teaching Prof - 2011
- Zimmer, Alex, BSc, PhD (McMaster), Asst Prof - 2022

Department of Computer Science

- Baker, Christopher, BSc (Univ of Newcastle upon Tyne, UK), PhD (Univ of Wales, UK), Prof - 2012
- Kim, Jong-Kyou, BCS, MSc, PhD (KAIST), Asst Prof - 2022
- Light, Janet, BEng (Madras), MEng (Bharathiar), PhD (Avinashilingam), Prof - 2012
- Mahanti, Prabhat, BSc (Calc), MSc, PhD (Indian Inst. of Technology), Prof - 2001
- Shaw, Ruth, BScDA, MScCS, PhD (UNB), Prof Emerita - 2020
- Tasse, Josee, BScCS (Montr), PhD (McG), Assoc Prof & Chair - 1997

Department of Engineering

- Abujayyab, Sadi, BScE (NED-Pakistan), Asst Teaching Prof - 2021
- 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 & Chair - 2006
- Hassan, Ikrema, BScE, MScE (U of K, Sudan), MScE (Lakehead U, Canada), PhD (UWO), PEng, Asst Prof - 2022
- Keshavarzi, Shokat, BSc (Iran), BEd(UBC, Canada), MSc (Iran), PhD (UOW, Australia), Teaching Prof - Engineering Physics, 2014
- Kwok, Michelle, BASc (UoFO), MSc (TCD, Ireland), MSc (UGent, Belgium), MIT, DUT, Asst Teaching Prof - 2021
- 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

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
- Brown, Maggie, BSc (UNB), MSc, IDPhD (Dal), Asst Prof - 2022
- Burgess, Andrea, BA, MSc (MUN), PhD (Ottawa), Assoc Prof - 2018

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- Gupta, Rameshwar D., BSc, MSc (Meerut), MA, PhD (Dal), Prof Emeritus - 2010
- Hamdan, Mohammad, BSc, MSc, PhD (Windsor), Prof - 1991
- McKay, Rebecca, BSc (MUN), MSc, PhD (Dal), Teaching Prof - 2016
- Stewart, Connie, BSc (UNB), MSc (Dal), PhD (Dal), Prof - 2013
- Tsagris, Michail, BSc, MSc (Athens), PhD (Nottingham), Adjunct Prof - 2022

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 & Chair - 2015
- DiTommaso, Enrico, BA (McGill), MA, PhD (UNB), Professor - 2008
- McGuire, Kathy, BA, MEd, MA (UNB), Teaching Professor - 2012
- Morris, Vanessa, BA (Waterloo), PhD (McMaster), Assistant Teaching Professor - 2022
- 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 - 1998

Nursing and Health Sciences

- Banks, Angela, BN, MN, Diploma in University Teaching (UNB) - Assoc Teaching Prof - 2021
- Doucet, Shelley, BN (UNB), MScN (UWO), PhD (UNB), Prof - 2021
- Dupont, Diana, BN, MN (UNB), Assoc Teaching Prof - 2021
- Edwards, Rosanne, BA, BScN, MScN, PhD (U of Ottawa), Asst Prof - 2020
- Furlong, Karen, RN Dip (SJSN), BN, MN, PhD, Diploma University Teaching (UNB), CNA Certification Neuroscience Nursing, Sr Teaching Assoc - 2000
- Gregg, Emily, BN, MN (UNB), PhD(c) (Queens University), Assoc Teaching Prof - 2022
- Hamilton, Catherine, BSN (Duke University), Certified Nurse-Midwife, MSc (Yale University), ARNP, MSN, PhD, (University of Florida), Asst Prof & Chair - 2019
- Hatfield, Meagan, BN (UNB), MN (Athabasca University), DUT (UNB), Assoc Teaching Prof - 2021
- Keeping-Burke, Lisa, BN, MN (MUN), PhD (McG), Assoc Prof, Assoc Dean of Health Research - 2012
- Mawhinney, Kathleen, BN, MN, Diploma in University Teaching (UNB), Senior Teaching Associate - 2020
- McCloskey, Rose, BSc (Acad.), RN Dip (Hfx.Inf.SN), BN (UNB), Diploma in Adult Ed. (St FX), MN, PhD, CNA Certification Gerontology Diploma University Teaching (UNB), Prof - 2000
- Pastirik, Pamela, BN (UNB), MSN (UBC), CNA certification Perinatal Nursing, Sr. Teaching Assoc - 2002
- Shamputa, Isidore 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), Assoc Prof - 2022
- Simpson, Catharine, BN (UNB), MN (Athabasca University), DUT (UNB), Assoc Teaching Prof - 2021
- Waycott, Loretta, BA (STU), BN (UNB), MN (Athabasca University), DUT (UNB), Assoc Teaching Prof - 2021

GENERAL INFORMATION

The Faculty of Science, Applied Science and Engineering (SASE) offers the following degrees: Bachelor of Health Science, Bachelor of Nursing, Bachelor of Science, Bachelor of Science in Computer Science, Bachelor of Science in Economics, and Bachelor of Science in Engineering. Within these programs are a variety of majors, honours, and specialization options that allow students to focus on a particular field. Students also have the opportunity to explore interests with a variety of minor and certificate programs. Co-operative education is available in some programs that enable students to combine academic studies with work terms. Details about each of these options is located in [Section E](#): Saint John Degree Programs section of the calendar under Degree Information. 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. Some

programs may have additional grade requirements. Please see specific degree programs for further information.

Students are strongly recommended to read the University-wide Regulations, Section III of this Calendar, and in particular the subsection headed Grading Systems and Classification. Any point not covered in the following regulations will be governed by the General University Regulations.

MINORS

Minor programs are offered to broaden a student's educational background and complement a Major or Honours program. Students in degree programs who complete the requirements for approved minor programs at UNB, will receive recognition of the minor upon completion of the respective degree program. Minors follow the 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. Science Minors are offered in the disciplines of Biology, Chemistry, Computer Science, Geology, Health Science, Psychology, Mathematics and Statistics.

Majors and Honours

Majors and Honours programs are offered in a variety of subject areas, though the first-year requirements for these options are similar. Upon the successful completion of the First Year, Bachelor of Science students should declare their Majors in one of the Science options.

In the second and succeeding years, students will typically specialize by taking courses appropriate to one of many options that are available to them. The options include: Biology, Biology-Psychology, Environmental Biology, Marine Biology, Mathematics, Mathematics and Economics, Mathematics and Statistics, Psychology, and Statistics. The remaining option, General Science, provides a variety of choices in both Science and Arts electives. Students should consult the respective program information in [Section E](#): Saint John Academic Programs of the Undergraduate Academic Calendar for further details on program requirements.

Preparation for Professional Programs

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. Some additional courses relating to admission requirements for the desired profession may be recommended as part of the students' BSc program to support the progression to the desired profession. Students who progress to a professional program before completing their BSc may be eligible to receive a General Bachelor of Science degree.

Regulations for Granting a General Bachelor of Science Degree

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.

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

- Each person entering the program must have the approval of the Data Analytics Governance Committee (data_analytics@unb.ca)
- 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.
- 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.
- 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:
 - CS 1073
 - 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

Students interested in Biology programs are requested to seek counselling from an undergraduate academic Advisor.

BSc Biology Major

Bachelor of Science students pursuing a Major in Biology must complete the following required and elective courses. A recommended sequence is outlined below:

First Year

- BIOL 1105, BIOL 1205, BIOL 1017.
- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077.
- MATH 1001.
- STAT 1793.
- GEOL 1044 and 5 ch of PHYS.
- And a minimum of 6 ch in approved electives*, for a total of 40 ch.

Second Year

- BIOL 2585, BIOL 2615, Plus three of BIOL 2015, BIOL 2065, BIOL 2125, BIOL 2245, or BIOL 2485.
- CHEM 2421.
- STAT 2793.
- 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

- 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).
- A minimum of 18 ch of approved electives*.
- A total of at least 137 ch is required for graduation.

*the electives must bring the total credit hours counting towards the program to 137; a minimum of 12 ch of the electives must be from non-Biology subjects.

BSc Biology Honours

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.

Zoology Specialization

Students in the Biology Major or Honours programs can specialize in Zoology. Information on the specific courses required for this specialization is available from the Department of Biological Sciences.

Biology 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:

- A minimum of 24 credit hours of biology.
- BIOL 1105, BIOL 1205, and BIOL 1017 (unless required for their major)
- 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).
- 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.

CHEMISTRY OPTIONS

The first year of five UNB Fredericton 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 disciplines 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.
- BIOL 1105, BIOL 1205, BIOL 1017, and 6 ch approved electives*.

*Students should consult UNB Fredericton program advisors for additional first year Biology credit requirements.

Major: See Chemistry Option Fredericton for a detailed description of the minimum credit hour requirements beyond first year.

Honours: : See Chemistry Option Fredericton for a detailed description of the minimum credit hour requirements beyond first year.

Honours Co-Op: See Chemistry Option Fredericton for a detailed description of the minimum credit hour requirements beyond first year.

Medicinal Chemistry Major: See Chemistry Option Fredericton for a detailed description of the minimum credit hour requirements beyond first year.

Medicinal Chemistry Honours: See Chemistry Option Fredericton for a detailed description of the minimum credit hour requirements beyond first year.

Minor: 24 ch from Chemistry courses above the 1000 level.

Second/Third/Fourth Year Courses

- CHEM 2009 Experience in Chemistry Research I
- 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

ENVIRONMENTAL BIOLOGY

Students interested in Environmental Biology programs are requested to seek counselling from an undergraduate academic advisor.

BSc Environmental Biology Major [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:

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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.

BSc Environmental Biology Honours

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.

Zoology Specialization

BSc Biology, Environmental Biology, and Marine Biology students can specialize in Zoology. Information on the specific courses required for this specialization is available from the Department of Biological Sciences.

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 Earth Sciences programs:

The following introductory courses are recommended for students interested in pursuing an Earth Sciences program:

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 one of the following two groups of courses: (PHYS 1011, PHYS 1012, PHYS 1021, 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 may need to take additional first-year Biology credits in Fredericton in a later year. Students should consult UNB Fredericton program advisors for details. These courses need not be completed in the first year of study, but 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.

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 (with approval from the Department of Biological Sciences) for students graduating with a UNB Saint John degree in another field.

Students whose programs require first-year geology courses may also count these courses towards a minor in Geology. The student must obtain a grade of C or better in all courses counting towards 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.

MARINE BIOLOGY

Students interested in Marine Biology programs are requested to seek counselling from an undergraduate academic advisor.

BSc Marine Biology Major

Bachelor of Science students pursuing a Major in Marine Biology must complete the following courses. A recommended sequence is outlined below:

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.
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 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*.
3. A total of at least 139 ch is required for graduation.

*the electives must bring the total credit hours counting towards the program to 139; a minimum of 12 ch of the electives must be from non-Biology subjects.

BSc Marine Biology Honours

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.

Zoology Specialization

Students in the Marine Biology Major or Honours programs can specialize in Zoology. Information on the specific courses required for this specialization is available from the Department of Biological Sciences.

MATHEMATICS OPTION

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)

- MATH 1003, MATH 1013, MATH 1503
 - 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 (NOTE: Geology courses include laboratory components)
 - PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022.
 - (APSC 1011/APSC 1015 and APSC 1021/APSC 1025 (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: 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, one of (CS 1003, CMPE 1003, or CS 1073), plus a minimum of 12 ch of approved electives.

Third Year and Fourth Year (Minimum 60 ch)

- MATH 3213, MATH 3713, MATH 3733, STAT 3793, STAT 4793 plus 15 ch of upper-level (3000-4000 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.
- Plus 21 ch of upper-level elective courses approved by the department.
- An additional 9 ch of electives at any level.

NOTE:

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. The Minor should be declared at the same time as the student's Major.

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 UNB Saint John. 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.

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:

- One of Math 2203 or Math 3343;
- 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)

- MATH 1003, MATH 1013, MATH 1503
- 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 1011 / APSC 1015, and APSC 1021 / APSC 1025 (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 coes

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, one of (CS 1003, CMPE 1003, or CS 1073), plus electives equivalent to 2 term-courses (term-courses are typically 3-5 ch).

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 refer to the 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 3303, MATH 3713, (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:

- Students are strongly advised to take the required courses ECON 1013 / ECON 1023 in their first year.
- MATH 1853 (Mathematics for Business I) cannot be taken for credit for this program.
- Students who are interested in pursuing graduate work in Mathematics must take MATH 3733.
- 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 (1000-2000 level) requirements:

- MATH 1003, MATH 1013, MATH 1503, MATH 2203, MATH 2513, MATH 2523
- STAT 1793, STAT 2793
- CS 1003, CMPE 1003, or CS 1073
- 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

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○ PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022.
(APSC 1011 / APSC 1015 and APSC 1021 / APSC 1025 (10 ch)
can be used to replace the full PHYS sequence (10 ch).)

NOTE: Geology courses include laboratory components.

- An additional 24 ch of electives at any level.
(Note: MATH 1853, MATH 2633 cannot be taken for credit.)

Upper-level (3000-4000 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 of upper-level (3-4000 level) electives

PHYSICS OPTION

The Saint John campus offers courses designed to lay the groundwork for Physics programs offered through the Fredericton campus. The recommended courses include:

- 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

For further information on the Physics programs available, please see Section G: Fredericton Degree Programs of the Undergraduate Academic Calendar.

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, PSYC 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, BIOL 2615
- CHEM 1041, CHEM 1046, CHEM 1072, CHEM 1077
- MATH 1001
- PSYC 1003, PSYC 1004, PSYC 2102, PSYC 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; and another fourth year seminar Psychology course
- 27 ch in Psychology courses, which are expected to be third or fourth year courses.
- 12 ch from List A (6 ch must be from either the third or fourth year).
- 15 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 a minimum of 129 ch, including the 18 Psychology courses identified in the recommended sequence above. Note: All psychology courses must be passed with at least a grade of C.

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 enrol 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 3.0, as well as, a cumulative grade point average of 3.7 in all psychology courses at the 2000, 3000, and 4000 level. Students must also take one of the following courses: PSYC 2021, PSYC 4111, PSYC 4122 or PSYC 4201. Please note that these minimum requirements do not guarantee acceptance into the Honours program; admittance is competitive and students must have 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 grade of 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

Certificates in Mental Health and Wellness

Mental Health and Wellness: Fundamentals

This certificate will introduce students to basic concepts and theories related to overall health and wellness. In this certificate, students will complete a series of third year university courses that focus on psychological disorders and their treatment, the impact of individual characteristics, and the association between physical and psychological wellness.

All courses will be available online. Students can also take in-person courses, if this is their preference. PSYC 1003 and PSYC 1004

Required Courses:

PSYC 3553 Psychopathology
 PSYC 3033 Health Psychology
 PSYC 3393 Systems of Therapy
 PSYC 3461 Personality
 Admission Requirements

1. To be eligible to apply for the Certificate in Mental Health and Wellness: Fundamentals, candidates must have obtained their high school diploma (or its equivalency) or 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.
2. Each student entering the certificate program on a full-time basis must have the prior approval of the Faculty of Science, Applied Science, and Engineering.

Program Requirements

1. Students who are currently enrolled in psychology degree programs at the University of New Brunswick or at another university can apply to complete the program, but will be advised as to how to meet the requirements of both the programs. Students who have withdrawn from an undergraduate degree program in psychology may apply for the certificate and transfer credits (as applicable).

2. 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 towards the Certificate.

3. A maximum of 50% of total program requirements may be transferred 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 reviewed for approval by the Department. Relevant courses transferred from elsewhere will be assessed for purposes of averaging by the Faculty of Science, Applied Science, and Engineering at the time the candidate applies for the certificate.

The Fundamentals Certificate (or equivalent) is the prerequisite for the advanced certificate.

Mental Health and Wellness: Community, Self, and Resilience

The certificate will 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. 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.

Required Courses:

PSYC 3323 Community Psychology and Mental Health

Three of:

PSYC 3453 Cross Cultural Psychology
 PSYC 3362 Guidance and Counselling
 PSYC 3493 Changing Behaviour
 PSYC 3803 Industrial Psychology
 PSYC 3416 Psychology of Happiness

Admission Requirements: The Fundamentals Certificate (or equivalent coursework). Although prospective students do not have to have a post-secondary degree/diploma to be admitted, this certificate is designed for individuals who have some prior professional experience.

Program Requirements:

1. Students who are currently enrolled in psychology degree programs at the University of New Brunswick or at another university can apply to complete the program, but will be advised as to how to meet the requirements of both the programs. Students who have withdrawn from an undergraduate degree program in psychology may apply for the certificate and transfer credits (as applicable).

2. 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 towards the Certificate.

3. A maximum of 50% of total program requirements may be transferred 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 reviewed for approval by the Department. Relevant courses transferred from elsewhere will be assessed for purposes of averaging by the Faculty of Science, Applied Science, and Engineering at the time the candidate applies for the certificate.

BIOLOGY - PSYCHOLOGY OPTION

Honours and Majors Program

This interdepartmental program offers both a Major and Honours. Normally all Psychology courses counted toward the Bachelor of Science Biology-Psychology 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).

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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. An Honours student must achieve a minimum final CGPA of 3.7 to obtain First Class Honours standing upon graduation. 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, including one of PSYC 4021, PSYC 4111, PSYC 4121, PSYC 4122, or PSYC 4201, 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 (**NOTE:** Geology courses include laboratory components)
- PHYS 1011, PHYS 1012, PHYS 1021, PHYS 1022. (APSC 1011 / APSC 1015 and APSC 1021 / APSC 1025 (10 ch) can be used to replace the full PHYS sequence (10 ch).)

c. A minimum of 3 ch of approved electives. **NOTE:** Geology courses include laboratory component

Second Year (Minimum 31 ch)

MATH 2203, MATH 2513, MATH 2523, STAT 1793, STAT 2793, one of (CS 1003, CMPE 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 (3000-4000 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 contribute to these 24 ch. MATH 3633 cannot be taken for credit towards the Minor in Statistics. The Minor should be declared at the same time as the student's Major.

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

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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:

- The total curriculum consists of a minimum of 141 credit hours.
- A grade of C or better is required in all required core courses and all courses offered for specializations or honours.
- 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.
- 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:

- Specialization in Data Analytics
- Specialization in Software Engineering, and
- Specialization in Networking

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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 amount 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:

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

CS4083, CS 4123, CS4973, or CS4999. The Department Chair must approve the topic chosen.

- 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:

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

- 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.

BACHELOR OF SCIENCE IN ENGINEERING

Department of Engineering

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Phone:	(506) 648-5595
Email:	eng@unb.ca
Website:	http://www.unb.ca/saintjohn/sase/undergrad/engineering/

FACULTY

Chair: Idris Gadoura, PhD, PEng

- Abujayyab, Sadi, BScE (NED-Pakistan), Asst Teaching Prof - 2021
- 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
- Hassan, Ikrema, BScE, MScE (U of K, Sudan), MScE (Lakehead U), PhD (UWO), PEng, Asst Prof - 2022
- Keshavarzi, Shokat, BSc (Iran), BEd(UBC, Canada), MSc (Iran), PhD (UOW, Australia), Teaching Prof - 2014
- Kwok, Michelle, BAsC (U of O), MSc (TCD, Ireland), MSc (UGent, Belgium), MIT, DUT, Asst Teaching Prof - 2021
- 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

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

- 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.

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
Electrical Engineering:	Instrumentation and control, energy conversion and utilization, electromagnetic interference and compatibility
Environmental Engineering:	water and wastewater treatment, air pollution control, groundwater flow and contaminant transport, solid and hazardous waste management, environmental impact assessment
Geodesy & Geomatics Engineering:	remote sensing of the environment, mapping of land and water resources, monitoring topographic change
Geological Engineering:	hazard mapping, environmental information systems 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 1011 and APSC 1015) or APSC 1013 (5 ch) + (APSC 1021 and APSC 1025) or APSC 1023 (5 ch)	PHYS 1081 (5 ch) + CE 1023 (4 ch)
Mechanical	(APSC 1011 and APSC 1015) or APSC 1013 (5 ch) + (APSC 1021 and APSC 1025) or APSC 1023 + APSC 2023 (3 ch)	PHYS 1081 (5 ch) + ENGG 1082 (4 ch) + ME 2003 (4 ch)
Software	(APSC 1011 and APSC 1015) or APSC 1013 (5 ch) + APSC	PHYS 1081 (5 ch) + BSE (3 ch)

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

	2023 (3 ch) + APSC 2028 (2 ch)	
Chemical,	(APSC 1011 and	PHYS 1081 (5 ch) +
Electrical,	APSC 1015) or APSC	ENGG 1082 (4 ch)
Geological,	1013 (5 ch) + (APSC	
Geodesy &	1021 and APSC	
Geomatics	1025) or APSC 1023 (5 ch)	

NOTE: A minimum grade of C is required for all prerequisite and all core and technical elective courses used for credit towards the BScE 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.

Bachelor of Science in Engineering

Environmental Engineering

General information

UNB Saint John offers a four-year Bachelor of Science in Engineering (BScE) program in Environmental Engineering (ENVE).

Environmental engineers study water, soil & air pollution problems, and develop technical solutions needed to solve, attenuate or control these problems in a manner that is compatible with legislative, economic, social and political concerns. Environmental engineers plan, design, and supervise a variety of industrial components and processes. They may be found working in various industries, including pulp and paper, oil and gas, and manufacturing, and in the public sector.

Students enrolled in the BScE in Environmental Engineering program take a set of core courses in environmental engineering and a range of other courses in Engineering, Biology, Chemistry, Geology, Mathematics, and complementary subjects. They must complete at least 166 credit hours to fulfill the program requirements and to meet the educational requirements for registration as a Professional Engineer.

The admission requirements for the BScE in Environmental Engineering program are the same as those for all other engineering programs at UNB. For information on admissions and university regulations, please consult Section B of the UNB Undergraduate Academic Calendar.

Requirements

To earn the BScE in Environmental Engineering, students must successfully complete a minimum of 166 credit hours with a minimum grade of C in all courses.

Students are responsible for ensuring that they have completed the necessary prerequisites for the required courses and required electives. Environmental Engineering students take the following:

Required courses for the BScE in Environmental Engineering (138 ch)

- APSC 1013 Mechanics I (5 ch)
- APSC 1023 Mechanics II (5 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)
- BIOL 2585 Introductory Ecology (4 ch)
- CE 2703 Introduction to Fluid Mechanics (4 ch)
- CE 2913 Numerical Problem Solving (4 ch)
- CHE 2003 Fundamentals I - Mass Balances (3 ch)
- CHE 2004 Fundamentals II - Mass and Energy Balances (3 ch)
- CHE 2012 Engineering Thermodynamics (3 ch)
- CHE 2501 General Materials Science (3 ch)
- CHE 2506 Materials Science Laboratory (1 ch)
- CHE 2525 Fundamentals of Chemical Processes Design (4 ch)
- CHEM 1872 General Physical and Organic Chemistry (3 ch)
- CHEM 1877 General Physical and Organic Chemistry Lab (2 ch)
- CHEM 2421 Organic Chemistry I (3 ch)
- CMPE 1003 Programming and Problem Solving for Engineers (4 ch)
- ENGG 1001 Engineering Practice Series (0 ch)
- ENGG 1003 Engineering Technical Communication (4 ch)
- ENGG 1015 Introduction to Engineering Design and Problem Solving (2 ch)
- ENGG 4013 Law and Ethics for Engineers (3 ch)
- ENGG 4032 Engineering Economics (3 ch)
- ENVE 2011 Introduction to Environmental Engineering (4 ch)
- ENVE 3121 Water Resources Engineering (5 ch)
- ENVE 3231 Contaminants and Pollutants Transport in the Environment (4 ch)
- ENVE 3322 Waste Treatment Principles and Design (4 ch)
- ENVE 3432 Air Pollution and Emission Control (4 ch)
- ENVE 3513 Soil Mechanics (4 ch)
- ENVE 3665 Introduction to Environmental Law (3 ch)
- ENVE 4040 Environmental Engineering Design Project (7 ch)
- GEOL 1044 The Earth: Its Origin and Evolution (5 ch)
- GEOL 1074 Earth Processes, Resources and the Environment (5 ch)
- GEOL 3442 Environmental Geology (3 ch)
- MATH 1003 Introduction to Calculus I (3 ch)
- MATH 1013 Introduction to Calculus II (3 ch)
- MATH 1503 Introduction to Linear Algebra (3 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)

A Basic Science Elective course (3 ch) (please note prerequisites may apply):

Each student is required to take one additional 3 ch basic science course chosen from Physics, Chemistry, or the life or earth sciences.

Complementary Studies Elective courses (9 ch) (please note prerequisites may apply):

The ENVE program requires 9 credit hours of Complementary Studies Electives. The choice of courses is subject to the ENVE program regulations for Complementary Studies Electives and the following:

- a. At least 3 ch must be related to technology and society (e.g. COMS 2001 Transformations in Media).
- b. An additional 3 ch must come from Humanities and Social Sciences (Classics, History, Philosophy, Politics and Sociology).
- c. The remaining 3 ch may be taken from the faculties of Arts (including HSS), Business, or through approval of the program coordinator. No more than Three credit hours 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. Other complementary studies courses may be taken subject to approval by the program coordinator.

NOTE: University Studies courses (eg. UNIV 1003) and ESL courses (e.g. ESL 1301) will not be counted for credit toward the BScE degree program.

Required Engineering Technical Electives (16 ch) (please note prerequisites may apply):

A minimum of 16 ch of required electives chosen from the following courses. Other senior level courses may be taken subjective to approval by the program coordinator:

BIOL 3165 Marine Ecology (4 ch)

BIOL 4115 Landscape Ecology (4 ch)

BIOL 4855 Biometrics (4 ch)

BIOL 4861 Advanced Environmental Biology (4 ch)

BIOL 4875 Environmental Techniques (4 ch)

CHEM 3245 Environmental Chemistry (4 ch)

DA 4803 Independent Studies in Data Analysis I (4 ch)

DA 4813 Independent Studies in Data Analysis II (4 ch)

The choice of Engineering Technical Electives shall be subject to the approval of the program coordinator. Not all Technical Electives may be available in any academic year.

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 for individual programs may be found within the descriptions. 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 1011 and APSC 1015) or 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 should 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 as specified in the following sections.

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 1021 and APSC 1025) or 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 1021 and APSC 1025) or 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

SECTION E: SAINT JOHN ACADEMIC PROGRAMS

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 1021 and APSC 1025) or 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):

- Humanities and Social Sciences (HSS) related to technology and society (examples: COMS 2001).
- Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
- 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 1003) 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.

Environmental Engineering

General Information

The goal of Environmental Engineering is to ensure that societal development and the use of water, land, and air resources are sustainable. This goal is achieved by managing these resources so that environmental pollution and degradation is minimized. A wide range of topics will be covered in the program—from life cycle analysis and environmental impact assessment to the design of industrial wastewater treatment processes and waste containment systems for solid and hazardous waste management. The Environmental Engineering graduates should be able to develop clean energy sources, reduce our environmental footprint, and protect our ecosystem, resources and public health.

The UNB Saint John undergraduate Diploma in Engineering Foundations program in Environmental Engineering satisfies the requirements for the first two years of the four-year BScE in Environmental Engineering degree at UNB Saint John. For details of the full four-year program, see Section E of the UNB Undergraduate Calendar. In addition to the core 29 ch listed above, students intending to pursue Environmental Engineering should take the following:

Required courses for the Diploma in Engineering Foundations – Environmental Engineering (55 ch) (Please note prerequisites may apply)

(APSC 1021 and APSC 1025) or APSC 1023 Mechanics II (5 ch)
BIOL 1017 Applications in Biology, Part II (2 ch)
BIOL 1105 Biological Principles, Part I (3 ch)
BIOL 1205 Biological Principles, Part II (3 ch)
CE 2703 Fluid Mechanics (4 ch)
CE 2913 Numerical Problem Solving (4 ch)
CHE 2003 Fundamentals I - Mass Balances (3 ch)

CHE 2004 Fundamentals II - Mass and Energy Balances (3 ch)
CHE 2012 Engineering Thermodynamics (3 ch)
CHE 2501 General Materials Science (3 ch)
CHE 2506 Materials Science Laboratory (1 ch)
ENVE 2011 Introduction to Environmental Engineering (4 ch)
GEOL 1044 The Earth: Its Origin and Evolution (5ch)
GEOL 1074 Earth Processes, Resources and the Environment (5 ch)
MATH 2513 Multivariable Calculus for Engineers (4 ch)
STAT 2593 Probability and Statistics for Engineers (3 ch)

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 1021 and APSC 1025) or 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:

- Humanities and Social Sciences (HSS) related to technology and society (examples: COMS 2001).
- Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology).
- 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 1003) 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. 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 new and 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 1003) 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

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Standard Courses Abbreviations	1099	INFORMATION TECHNOLOGY	14343
Course Numbers	10909	LATIN	14343
Codes	1099	LINGUISTICS	14343
APPLIED SCIENCE	11010	MATHEMATICS	14343
ARTS	11010	MECHANICAL ENGINEERING	1455
BIOLOGY	11010	NURSING	1466
BUSINESS ADMINISTRATION	115	PHILOSOPHY	1477
CHEMICAL ENGINEERING	12020	PHYSICS	1488
CHEMISTRY	12121	POLITICS	1499
CHINESE	12222	PSYCHOLOGY	15050
CIVIL ENGINEERING	12222	SCIENCE	15353
CLASSICS AND ANCIENT HISTORY	12222	SOCIAL SCIENCE	15454
COMMUNICATION STUDIES	12222	SOCIOLOGY	15454
COMPUTER ENGINEERING	1243	SPANISH	1566
COMPUTER SCIENCE	1244	STATISTICS	1566
DATA ANALYSIS	1277	UNIV	1577
ECONOMICS	1277	WORLD LITERATURE	1577
EDUCATION	1288		
ELECTRICAL AND COMPUTER ENGINEERING	1299		
ENGINEERING	1299		
ENGLISH	13030		
ENGLISH SECOND LANGUAGE	13232		
ENVIRONMENTAL ENGINEERING	13232		
FRENCH	13333		
GENDER STUDIES	1366		
GEODESY AND GEOMATICS ENGINEERING	1366		
GEOGRAPHY	1366		
GEOLOGY	1366		
GERMAN	1377		
GREEK	1377		
HEALTH	1377		
HEALTH SCIENCES	1399		
HISTORY & ENGLISH	1399		
HISTORY	139		
HOSPITALITY AND TOURISM	14141		
HUMANITIES	14242		

Standard Courses Abbreviations

Academic ESL	AESL
Adult Education	ADED
Anthropology	ANTH
Applied Science	APSC
Arabic	ARAB
Arts	ARTS
Astronomy	ASTR
Biology	BIOL
Business Administration	BA (SJ) ADM (FR)
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 and Computer Engineering	ECE
Engineering	ENGG
English	ENGL
Environmental Engineering	ENVE
Environmental Management	ENVM
Earth Sciences	ESCI
Film	FILM
Forestry	FOR
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
Greek	GRK
Modern Greek	GRKM
History	HIST
Indigenous Studies	INDG
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
Music	MUS

Nursing	NURS
Philosophy	PHIL
Physics	PHYS
Political Science	POLS
Psychology	PSYC
Publishing	PUB
Recreation & Sports Studies	RSS
Russian	RUSS
Sociology	SOCI
Software Engineering	SWE
Spanish	SPAN
Statistics	STAT
Technology Management & Entrepreneurship	TME
University Studies	UNIV

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 and/or UNB's online registration system:

Instructional Formats

C - Class lecture	S - Seminar
L - Laboratory	T - Tutorial
PRAC - Practicum	WEB - Web delivery
R - Reading course	WS - Workshop

Course Elements

A - Alternate year offering	O - Occasionally offered
ch or cr - Credit Hours	P - Programming component
EL - Experiential Learning component	W - English Writing component
LE - Limited Enrolment	* - Bi-Weekly offering

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 Course Catalogue (<https://colleaguess.unb.ca/Student/Student/Courses>) to find when courses are offered in a particular year and when they are scheduled. Not all courses listed are given every year.

SECTION F: SAINT JOHN COURSES

APPLIED SCIENCE

APSC1011 Mechanics I 4 ch (4C 1T)

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 (FBDs) 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-requisite:* MATH 1003 or permission of the instructor

APSC1015 Mechanics I Laboratory 1 ch (3L*)

A selection of experiments to accompany APSC 1011. *Co-requisite:* APSC 1011

APSC1021 Mechanics II 4 ch (4C 1T)

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 1011 and APSC 1015) or APSC 1013. *Co-requisite:* MATH 1013 or permission of the instructor.

APSC1025 Mechanics II Laboratory 1 ch (3L*)

A selection of experiments to accompany APSC 1021. *Prerequisites:* APSC 1015 or APSC 1013. *Co-requisite:* APSC 1021

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 (1PRAC)

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 (3C)

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 (3PRAC)

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 (1PRAC)

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 (1PRAC)

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

NOTE: See beginning of [Section F](#) for abbreviations, course numbers and coding.

BIOL1017 Applications in Biology 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 minimum grade of C. *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. *Prerequisite:* BIOL 1105 with a minimum grade of C.

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:** Credit cannot be counted for both BIOL 1411 and BIOL 1441. This course cannot count towards the BN program. *Prerequisites:* High school grade 12 chemistry and biology.

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:** Credit cannot be counted for both BIOL 1412 and BIOL 1444 This course cannot count towards the BN program. *Prerequisite:* BIOL 1411 or BIOL 1441

BIOL 1431 Anatomy and Physiology Lab I 1ch (3L)

Basic concepts in human anatomy and physiology with an emphasis on the normal condition. This course includes a selection of appropriate laboratory exercises using non-cadaver visualization tools. **NOTE:** Credit cannot be counted for both BIOL1431 and BIOL1441. This course cannot count for credit towards the BN program. *Prerequisite:* High school grade 12 chemistry and biology
Co-requisite: BIOL 1411

BIOL 1432 Anatomy and Physiology Lab II 1ch (3L)

Continuation of BIOL 1431, basic concepts in human anatomy and physiology with an emphasis on the normal condition. This course includes a selection of appropriate laboratory exercises using non-cadaver visualization tools. **NOTE:** Credit cannot be counted for both BIOL1432 and BIOL1442. This course cannot count for credit towards the BN program. *Prerequisite:* BIOL1431
Co-requisite: BIOL 1412

BIOL1441 Anatomy and Physiology for Nursing I 4ch (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. **NOTE:** Students counting credit for BIOL 1441 cannot count credit for BIOL1411 or BIOL 1431. *Prerequisites:* High School grade 12 chemistry and biology

BIOL1442 Anatomy and Physiology for Nursing II 4ch (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. **NOTE:** Student counting credit for BIOL 1442 cannot count credit for BIOL1412 or BIOL1442.

Prerequisite: BIOL 1441

BIOL2015 Introductory Genetics 4 ch (3C 3L*) (W) (EL)

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, 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 1017 and BIOL 1105 and BIOL 1205.

BIOL2135 Introductory Botany for Non-Biologists 3 ch (3C)

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 1017 and BIOL 1105 and BIOL 1205.

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 1017, BIOL 1105 and BIOL 1205.

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 1017, BIOL 1105 and BIOL 1205.

BIOL2585 Introductory Ecology 4 ch (3C 4L*) (W)

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 1017 and BIOL 1105.

BIOL2615 Introductory Zoology 5 ch (3C 3L)

Classification, functional morphology, development and evolution of the major animal groups. *Prerequisites:* BIOL 1017 and BIOL 1105 and BIOL 1205; 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 (3C/WEB)

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:* 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.

BIOL3065 Ecological Decision-Making 4 ch (3C 1.5L) (W) (EL)

This course introduces the discipline of decision science, which is an interdisciplinary field that uses quantitative data from various sources to make the best decisions. The course applies this technique to a coastal management and planning context. It will include biological, economic, political, and cultural aspects of coastal management. *Prerequisite:* BIOL 2585.

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) (EL)

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) (EL)

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 Applied Coastal Ecology Majors and 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:* CHEM 2421.

BIOL3251 Introduction to Microbiology 3 ch (3C/WEB)

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

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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.

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) (EL)

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 with a minimum grad of C in both.

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 (Applied Coastal Ecology, Biology, Marine 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.

BIOL3608 Geographic Information Systems 4 ch (1.5C 3L) (EL)

This course introduces GIS (Geographic Information System) with the ArcGIS suite which is the industry standard for mapping and spatial data analysis. Students will use GIS to analyze real publicly available data and generate spatial analyses. Students will learn to communicate results in publication quality maps and graphics. Examples will center around applied ecological management of coastal systems.

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 social 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.

BIOL3655 Coastal Ecology and Management 4 ch (3C 1.5L) (W) (EL)

Ecology is the interactions of organisms with each other and their environment. Managers at various levels of government must balance diverse stakeholders and interests to serve economic, cultural, and conservation domains. This course will explore coastal ecology, the management of coastal systems, and will use case studies from around the world to teach the concepts. *Prerequisite:* BIOL 2585

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. Credit can only be counted for one of: ENVE 3665, or BIOL 3665. *Prerequisites:* a minimum of 60 ch.

BIOL3714 Animal Communication (Cross-Listed: PSYC 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:* 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 Applied Coastal Ecology Majors and 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; 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 (A) 5 ch (3C 3L) (LE) (EL) W

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 with a minimum grade of C or 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) (EL)

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 minimum grade of "C".

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 minimum grade of "C".

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 the 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) (EL)

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 minimum grade of "C".

BIOL3943 Current Topics in Marine Sciences 2 ch (3C) (EL)

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 3 ch (1C 3L) (EL)

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

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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) (EL)

This course introduces students to intertidal ecology. Topics covered will vary from year to year, but may include the origin, evolution, and diversity 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) (EL)

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) (EL)

Gives academically strong Biology, Biology-Psychology, and Marine Biology Majors, under the supervision of a full time faculty member, an opportunity to undertake a thesis project with permission of the Department. Students who intend to apply for this course are advised to consult with their intended supervisory faculty member at the beginning of their third year.

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 the Instructor.

BIOL4178 Applied Ecology Skills and Techniques 5 ch (3C 3L) (W)

Students will complete five Applied Coastal Ecology skills modules. The course will address critical skills and concepts including, sampling design, monitoring techniques, field sampling techniques, data management, coding, and advanced statistical techniques. *Prerequisite:* BIOL 2585

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) (EL)

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 Secondary Metabolism (A) (Cross-Listed: CHEM 4435) 3 ch (3C)

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 with a minimum grade of C in both.

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) 3ch (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 (3C 3L)

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) (EL)

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) (W)

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.

BIOL4955 Data Science and Programming 3 ch (1C 2L)

This course will teach programming in the Python and/or R languages. The course will also use BASH scripting to interact with and manipulate files and use remote servers. The course will prepare students for "big data" ecological modelling. *Prerequisite:* CS 1003 or an appropriate introductory programming course approved by the instructor.

BIOL4985 Coastal Ecological Modelling 4 ch (2C 3L)

This course teaches ecological modelling in a coastal setting. Students will use the Python and R languages as well as GIS to model populations of organisms in response to fishing, development, climate change and natural variability. *Prerequisite:* BIOL 3655.

BIOL4995 Capstone Project 5 ch (3C 3L) (W) (EL)

This course will teach the students to work as a team to create a coastal management plan. Students will be arranged in small teams with complementary skill sets and interests. Students will create a multi-year management plan for a coastal ecosystem (e. g. Bay of Fundy). Preparing the management plan will require students to understand concepts from multiple disciplines including ecological modelling, economics, social science, and environmental law. Expert stakeholders will be invited to present lectures. The completed management plan will be presented orally for the final exam. *Prerequisite:* A minimum of 90 ch and permission of the instructor. (Note: This course is only open to students in the Applied Coastal Ecology major).

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, BAM or BAMAC 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 course catalogue must be consulted for courses offered each year.

NOTES:

1. Students who feel they have the equivalent prerequisite background through a combination of coursework and work experience, may request permission from the instructor.
2. 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.

NOTE: See beginning of [Section F](#) for abbreviations, course numbers and coding.

BA1215 Introduction to Financial Reporting 3ch (3WEB)

Examines the use of accounting information within and outside of organizations. Focuses on the impact of business events on financial statements and financial statement analysis. Credit cannot be counted for

both BA 1215 and BA 1216. This course cannot count for credit towards the BBA Accounting major. *Prerequisite:* MATH 1853 with a minimum grade of C, or enrolment in BEVT, BINT, BH or the BHS Respiratory Therapy Program.

BA1216 Introduction to Financial Accounting 3 ch (3C)

Examines the measurement, recording, and communication of financial information and its use in decision making for business entities. Focuses on the integration of both the theoretical and practical applications of accounting concepts. *Prerequisite:* MATH 1853 with a minimum grade of C or enrolment in BEVT, BINT, or BH programs.

BA1501 How Business Works 3 ch (3C)

This course provides the student with an accessible, comprehensive and dynamic introduction to business and management in today's globalized world. Through readings, case studies 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.

NOTE: Students must enrol in this course prior to completing 30 credit hours of Business (BA) courses

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 of the instructor to attend this class.

BA2123 Introduction to Digital Business 3 ch (3C) EL

This is an introductory course that reviews and examines key examples and cases of companies that have transformed their business models through 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 18 ch of courses counting towards the BBA or permission of the instructor.

BA2217 Introduction to Managerial Accounting 3 ch (3C)

Examines the use of accounting information for planning and control in for-profit organizations. Topics include cost-volume-profit analysis, cost allocation, budget planning and control, and performance evaluation. Note: credit will not be granted for both BA2217 and HTM2217. *Prerequisite:* A minimum grade of C in either BA 1215 or BA 1216.

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/WEB)

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 18ch of courses counting towards the BBA program, or permission of the instructor.

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

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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 implications 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 18ch of courses counting towards the BBA program, or permission of the instructor.

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 (1PRAC)

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.

BA3105 Improving Healthcare Systems (Cross-listed with HEAL 3501) 3 ch (3C) EL

Improving Healthcare Systems provides students with the knowledge and skills needed to enhance efficiency and the patient experience in hospital administration. Throughout this course, students will explore creative problem-solving, strategic thinking, and design thinking techniques, all applied to healthcare management. By the end of the course, students will be well-equipped to address the complex challenges of healthcare administration, leading to improved patient experiences and better care outcomes. *Prerequisites:* BA1501 and successful completion of 60ch

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. **NOTE:** Credit will be given for only one of BA 3129, BA 4319, BA 4829 and HTM 4129. *Prerequisites:* BA 1605 and one of BA 2303, BA 2858 or HTM 1103 and *Co-requisite:* BA 2606 with a minimum grade of C.

BA3131 Creative Problem Solving 3 ch (3C)

This course introduces the student to a structured creative problem solving process (such as the Simplicity 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. *Prerequisite:* Successful completion of 60 ch.

BA3133 Business Model Innovation 3 ch (3C) EL

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. *Prerequisite:* Successful completion of 60 ch.

BA3134 Government and Business (O) 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 & Systems Thinking 3 ch (3C)

This course presents the student the latest design and systems thinking methods and the fields 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. *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. *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 Intermediate Managerial Accounting 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 Financial Accounting I 3 ch (3C)

Explores accounting principles and practices in more detail than an introductory course. Topics include the definition, measurement, recording, and reporting of assets and income. *Prerequisites:* BA 1216 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 Digital Marketing 3 ch (3C)

This course examines the integration of digital marketing tools in an organization's marketing and business strategies. Topics include,

principles of search-engine optimization, content optimization, social media marketing, 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/WEB) (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. *Prerequisite:* A minimum grade of C in BA 1215 or BA 1216.

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 Behaviour and Management (O) 3 ch (3C)

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 Change (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) Information Management 3 ch (3C)

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. Credit can only be counted for one of BA 3623 or INDT 3623. *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 probabilistic 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. Credit can only be counted for one of BA 3624 or INDT 3624. *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. Credit can only be counted for one of BA 3653 or INDT 3653. *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. Credit can only be counted for one of BA 3654 or INDT 3654. *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. Credit can only be counted for one of BA 3661 or INDT 3661. *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). Credit can only be counted for one of BA 3672 or INDT 3672. *Prerequisite:* Successful completion 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. *Prerequisite:* Successful completion of 6ch.

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

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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 Human Resource Management (O) 3 ch (3C)

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 (1PRAC)

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 (3C/S)

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 Associate Dean of 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 (3C/S)

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 1501 or BA 1216) and BA 2303 each 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 4107 with a minimum grade of C.

BA4147 Research Report (O) 3 ch (3C/S) (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 3129 (or equivalent) and 90ch and permission of the instructor.

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 3129 (or equivalent) and 90ch and permission of the instructor.

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 (3C/S)

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 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 (3C/S)

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 (3C/S)

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 (3C/S)

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 Employee Wellness 3 ch (3C)

SECTION F: SAINT JOHN COURSES

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 (1PRAC)

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.

BA4904 Business Simulation 0 ch (1L)

The course provides students with an opportunity to demonstrate their program learning through an engaging, team-based competition using both business cases and software simulations. This course is graded as Credit/No Credit (CR/NCR). *Prerequisites:* Permission of the instructor.

BA5001 Communication in the Healthcare Environment 3 ch (3WEB)

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 in the Non-Profit Sector 3 ch (3WEB)

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 (3WEB)

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 (3WEB)

Introduction to human resources management (HRM) in healthcare provides a broad overview of health human resource management. In this course, students will learn about the theoretical foundations of HRM and will have an opportunity to explore challenges and the best practices of human resource management within the healthcare environment. Some topics include job analysis and design, human resource planning, recruitment and selection, performance management, and onboarding,

training and development, and career planning. **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 (3WEB)

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 with a grade of C or better.

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. All prerequisites must be completed with a grade of C or better.

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) (EL)

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). All prerequisites must be completed with a grade of C or better.

CHE2506 Materials Science Laboratory 1 ch (3L*) (EL)

Laboratory experiments are conducted to illustrate behaviour of materials and other concepts covered in CHE 2501. *Prerequisite:* CHEM 1877 or CHEM 1077. All prerequisites must be completed with a grade of C or better. *Co-requisite:* CHE 2501.

CHE2525 Fundamentals of Chemical Processes 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:* ENGG 1003, ENGG 1015. All prerequisites must be completed with a grade of C or better. *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 and Pre-Calculus Math or equivalents.

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 with a minimum grade of C. *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 with a minimum grade of C. *Co-requisite:* CHEM 1072.

CHEM1831 What on Earth Isn't Chemistry (Cross-Listed: SCI 1831) 3 ch (3C)

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. CHEM 1831 cannot be used to satisfy requirements of any Faculty of Science, Applied Science and Engineering program.

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. *Co-requisite:* CHEM 1872.

CHEM2009 Experience in Chemistry Research I 3 ch (3L) (EL) (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 Chairperson of the Department of Biological Sciences. 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:* A minimum grade of C in each of 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 with a minimum grade of C in each.

CHEM2416 Organic Chemistry Laboratory I 2 ch (3L 1T) (W)

Introduction to experimental (organic) chemistry. Part I. *Prerequisite:* CHEM 1077 with a minimum grade of C. *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 with a minimum grade of C or, for Chemical Engineering, Environmental Engineering and Bachelor of Health students only, CHEM 1872 with a minimum grade of C.

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 with a minimum grade of C.

CHEM2455 Biopharmaceutics (Cross-listed with HEAL 2155) 3ch(3C 1T)

The course will provide an overview of the pharmaceutical industry, the process of drug discovery and optimization. An overview of the properties and biological activity of therapeutic substances, and case studies of select drug classes such as antibiotic, anti-ulcers drugs and/or others.

Prerequisite: CHEM 2421 with a minimum grade of C.

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 with a minimum grade of C. *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 with a minimum grade of C 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:* CHEM 2421 with a minimum grade of C or equivalent.

CHEM3335 Chemical Management Practices (O) 2 ch (3L*)

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 both with a minimum grade of C.

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 with a minimum grade of C.

CHEM3909 Directed Studies in Chemistry 3 ch (3R/CL/S/PRAC)

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.

SECTION F: SAINT JOHN COURSES

The content and evaluation of each directed study will be determined through negotiation between a student and the supervising faculty member. *Prerequisites:* Must have completed 30 credit hours with a minimum CGPA of 3.3 and permission of the instructor.

CHEM4435 Biologically Active Natural Products and Secondary Metabolism (A) (Cross-Listed: BIOL 4435) 3 ch (3C)

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 may be 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 with a minimum grade of C.

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

CE2023 Mechanics of Materials 5 ch (3C 3L)

Elastic and plastic stress, strain; behaviour of beams and columns, torsion; material strength. *Prerequisite:* (APSC 1021 and APSC 1025) or APSC 1023. All prerequisites must be passed with a grade of C or better. *Co-requisite:* MATH 1013.

CE2033 Structural Analysis 5 ch (3C 3L) (EL)

Influence lines for beams and trusses; analyses of indeterminate structures including approximate, classical, moment distribution, and numerical methods. *Prerequisite:* CE 2023 with a grade of C or better.

CE2113 Soil Mechanics I 4 ch (3C 3L*) (EL)

Soil properties, seepage, effective stress, consolidation, shear strength. Credit cannot be obtained for both ENVE 3513 and CE 2113. *Prerequisites:* GEOL 1044, CE 2023. All prerequisites must be passed with a grade of C or better. *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 1021 and APSC 1025) or APSC 1023 and MATH 1013. All prerequisites must be passed with a grade of C or better.

CE2913 Numerical Problem Solving 4 ch (3C 2L) (EL)

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. All prerequisites must be passed with a grade of C or better.

CE2973 Civil Engineering Design I 3 ch (2C 2L) (W) (EL)

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. All prerequisites must be passed with a grade of C or better.

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 Jewish Wars (O) 3 ch (3C) (W)

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 cannot be counted for both COMS 1001 and 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 cannot be counted for both COMS 1002 and 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 cannot be counted for both COMS 1002 and ICS 1002.

COMS2101 Popular Music, Culture and Communication 3 ch (3C)

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 cannot be counted for both COMS 2101 and 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 cannot be counted for both COMS 2103 and 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 course 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 Communication (Cross-Listed: HEAL 2001) 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 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. Credit cannot be counted for 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 cannot be counted for both COMS 3001 and ICS 3001.

Prerequisites: Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

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 cannot be counted for both COMS 3003 and 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 cannot be counted for both COMS 3004 and ICS 3004. *Prerequisite:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3005 Intellectual Property and the Information Commons 3 ch (3C) (W)

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 cannot be counted for both COMS 3005 and 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 cannot be counted for both COMS 3006 and 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 Communication Studies 3 ch (3C) (W)

Exploration of specialized topics in media studies, technology and society, or communication policy issues. Credit cannot be counted for both COMS 3101 and 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 cannot be counted for both COMS 3102 and ICS 3102. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS3103 Digital Media in Everyday Life 3 ch (3S) (W)

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.

COMS3104 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 mediated 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. Credit cannot be counted for both COMS 4104 and COMS 3104. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS 3105 Sports and Media 3ch(3C)

This course examines the media representations of the world of sport, from global mega-events to Canadian hockey. Students will analyze issues of race, gender, class, orientation, nationalism, and labour in the spectacle of contemporary sports. The objective is to direct critical thinking towards a primary fixation of our culture.

Prerequisites: Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor

COMS3119 Communication Presentation Techniques 3 ch (3C)

Despite the myriad of possibilities 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 presentation competencies. Credit cannot be counted for both COMS 4119 and COMS 3119. *Prerequisites:* Successful completion of fifteen term-courses, including COMS 2001, or permission of the instructor.

COMS4001 Research Seminar in Communication Studies 3 ch (3S) (W)

This seminar provides majors with the opportunity to do basic research in an area of special interest. Credit cannot be counted for both COMS 4001 and ICS 4001. *Prerequisites:* COMS 3001, COMS 3003 or 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 cannot be counted for both COMS 4101 and 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 cannot be counted for both COMS 4103 and ICS 4103. *Prerequisites:* COMS 3001 and COMS 3003, or permission of the instructor.

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 is taught using the Python programming language. 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. *Prerequisites* must be passed with a grade of C or better.

COMPUTER SCIENCE

CS1003	Programming and Problem Solving for Engineers	4 ch (3C 1.5L*)

CS1023	Data Structures and Algorithms	4 ch (3C 2L)

CS1063 Introduction to Computer Programming in Python 3 ch (2C 1L)

CS1073 Introduction to Computer Programming I 4 ch (3C 1.5L 1T) (P)
(in Java)

CS1083 Introduction to Computer Programming II 4 ch (3C 1.5L 1T) (P)
(in Java)

CS1103	Introduction to Databases	4 ch (3C 2L)

CS1303	Discrete Structures	4 ch (3C 1T)

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CS2043	Software Engineering I	4 ch (3C 2L)

CS2113	Scientific Computing (O)	4 ch (3C)

CS2253 Machine Level Programming 4 ch (3C 2L) (P)

CS2263 Systems Software Development 4 ch (3C 2L) (P)

CS2333	Computability and Formal Languages	4 ch (3C 1T)

CS2383	Data Structures and Algorithms	4 ch (3C 1T) (P)

CS2616 Java for Programmers (O) 1 ch (2C) (P)

CS2617 C/C++ for Java Programmers (O) 1 ch (2C) (P)

CS2704	Data Analytics using Python (Cross-Listed: DA2704) (A)	4 ch (3C 1L) (P)

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

**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, 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 HUM 1021 (Effective Writing I) or one course from Faculty of Arts with 'W' designation or exemption from the BScCS Core Writing Requirement.

CS4033 Software Project Management and Quality Assurance (A) 4 ch (3C)

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.

SECTION F: SAINT JOHN COURSES

CS4083 Leading-Edge Technology in Software Development (O) 4 ch (3C)

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 Visualization (O) 4 ch (3C)

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 (O) (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 optional but 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, and either 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 uncertainty, 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 (1S) 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 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 (1S) 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 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. *Prerequisite:* Approval of the CS department and at least 90 ch completed.

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 with a minimum grade of C.

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 with a minimum grade of C.

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 with a minimum grade of C.

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 with a minimum grade of C.

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 with a minimum grade of C.

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) with a minimum grade of C.

DA4803 Independent Studies in Data Analysis I 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 II 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 Macroeconomics 3 ch (3C)

This course develops material from ECON 1023. Applications of macroeconomic theory are emphasized. It focuses on inflation, the determinants of interest rates and exchange rates, standard macroeconomic models of closed and open economies, and short run fluctuations of macroeconomic variables such as unemployment and output. Alternative stabilization policies are evaluated with reference to the Canadian economy. *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)

An advanced course in macroeconomic theory and analysis, with emphasis on the theory of economic growth, investment, consumption, money, and employment. Neoclassical monetary equilibrium, and the Keynesian and post-Keynesian models. *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.

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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)

This course examines the macroeconomic aspects of monetary theory and policy. Topics include how central banks influence interest rate and inflation rate, the demand and supply for money, international financial markets, international banking, applications of the IS-MP curves, and other monetary policy related issues. *Prerequisites:* ECON 1013 and ECON 1023.

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. **NOTE:** Credit will be granted either for ECON 3213 or for ECON 3203 / ECON 3233. *Prerequisites:* ECON 1013 and ECON 1023.

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 1013 and ECON 1023. Recommended: 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. *Prerequisite:* 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.

ECON3765 Sustainability Economics 3 ch (3C/PRAC) EL

In this research and projects-based course we explore the United Nations' 17 Sustainable Development Goals (SDGs). Each student will produce an individual annotated bibliography that integrates economic thinking and one or more of the SDGs. At the same time, each student will work as part of a group to select an SDG-inspired project either on campus or in the City of Saint John. *Prerequisites:* ECON1013 and ECON1023

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)

Topics include neoclassical theories, Keynesian and post-Keynesian models, static and dynamic equilibrium 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. **NOTE:** Credit cannot be counted for both ECON 4645 and STAT 4703. *Prerequisites:* STAT 1793 and STAT 2793 (or equivalent), and 4 term-courses in Economics.

ECON4665 Mathematical Economics II 3 ch (3C)

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 Colonialism and Indigenous Peoples in America 3 ch (3C) W (Cross-Listed: HIST 2514)

This course will focus on the history of Indigenous Peoples in the context of early European exploration, the fur trade, missionization, and colonial policies. Note: 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) W

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/PSYC 3201 and ED 3021 **NOTE:** Open to Education Students only. *Prerequisites:* PSYC 1003 and PSYC 1004.

ED3031 The Education of Exceptional Learners 3 ch (3C) W

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) W

A study of dominant theories which influence and shape educational thinking and practice today. Key ideas, their origins, their current representatives, 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.

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 3 ch (3C) W

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.

ED5032 Inclusion from the Early Years 3 ch (3C) W

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 (3C)

Students will normally be limited to only 3 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

ELECTRICAL AND COMPUTER ENGINEERING**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, and Measurements 2 ch (1C 2L) (EL)

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 with a minimum grade of C.

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. Credit will not be given for both ECE 2214 and CS 2803. *Prerequisite:* CMPE 1003 or CS 1003 or CS 1073 or equivalent. Prerequisites must be passed with a minimum grade of C. *Recommended:* ECE 1813. *Co-requisite:* ECE 2215.

ECE2215 Digital Logic Design Laboratory 2 ch (3L) (EL)

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. Prerequisites must be passed with a minimum grade of C. *Recommended:* ECE 1813. *Co-requisite:* ECE 2214.

ECE2412 Simulation and Engineering Analysis 4 ch (3C 2L*) (EL)

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. All prerequisites must be passed with a minimum grade of C.

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. All prerequisites must be passed with a minimum grade of C.

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. All prerequisites must be passed with a minimum grade of C. *Co-requisite:* MATH 3503 or equivalent.

ENGINEERING**ENGG1001 Engineering Practice Lecture Series I 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. Introduces students to the Faculty and provides guidance on study habits as well as the concepts of diversity and inclusion. This course will be graded as Credit/No Credit (CR/NCR).

ENGG1002 Engineering Practice Lecture Series II 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. Introduces students to the Faculty and provides guidance on study habits as well as the concepts of diversity and inclusion. This course will be graded as Credit/No Credit (CR/NCR).

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

SECTION F: SAINT JOHN COURSES

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 Problem Solving 2 ch (1C 2L) (W) (EL)

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 1011 and APSC 1015) or APSC 1013, MATH 1003, MATH 1503.

ENGG4014 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. Limited enrolment; priority given to students in their final year of engineering. Note: Credit cannot be counted for both ENGG 4014 and ENGT 4014. *Prerequisite*: Restricted to students with at least 100ch in an engineering program.

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. Note: Credit cannot be counted for both ENGG 4032 and ENGT 4032. *Prerequisite*: Restricted to students with at least 60 ch in an engineering program.

ENGLISH

The prerequisite for upper level (3000-4000 level) courses in English is 3 term-courses of English at the lower level (1000-2000 level), unless 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.

ENGL1101 Literature in English I 3 ch (3C) (W)

A survey of literature in English to the end of the 18th century. A required course for students taking an ENGL Honours, Major, Double Major or Minor. ENGL 1101 and ENGL 1102 can be taken in any order. (Formerly ENGL 2101; students with ENGL 2101 cannot take ENGL 1101.)

ENGL1102 Literature in English II 3 ch (3C) (W)

A survey of literature in English from 1800 to the present. A required course for students taking an ENGL Honours, Major, Double Major or Minor. ENGL 1101 and ENGL 1102 can be taken in any order. (Formerly ENGL 2102; students with ENGL 2102 cannot take ENGL 1102.)

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.

ENGL3009 Studies in Medieval Literature 3 ch (3C) (W)

A study of selected texts from the 5th to the 15th centuries CE in Britain. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3104 Shakespeare and Pedagogy 3 ch (3C) (W) EL

This course will study various pedagogical approaches for up to three Shakespeare plays frequently taught at the high school level. The final project is teaching a component of Shakespeare to a high school class. *Prerequisite*: 9ch of lower-level English, or permission of 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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3204 18th Century Prose and Poetry 3 ch (3C) (W)

Examines the literature of the 18th century, excluding the drama. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3205 Prose Narrative Before 1800 3 ch (3S/C) (W)

Examines genres of prose narrative through to 1800 with emphasis on the novel. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3206 Writing by Women Before 1800 3 ch (3C) (W)

A study of texts by women in a variety of genres to the mid-eighteenth century. As ENGL 3206 replaces ENGL 3621, credit cannot be counted for both. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3304 Studies in the Romantic Age 3 ch (3C) (W)

This course will study a selection of texts from the period 1789 to 1832. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

ENGL3311 Victorian Poetry 3 ch (3C) (W)

Studies the major poets of Victorian Britain. *Prerequisite*: 9ch of lower-level English, or permission of the instructor.

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. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3313	The Earlier Victorian Age	3 ch (3C) (W)
This course will study a selection of texts from the period 1832 to 1870. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3314	The Later Victorian Age	3 ch (3C) (W)
This course will study a selection of texts from the period 1870 to 1901. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3402	Modern British Novel	3 ch (3C) (W)
A study of selected novels. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3502	Canadian Novel	3 ch (3C) (W)
A study of selected novels. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3504	Canadian Short Fiction	3 ch (3C) (W)
A study of selected short fiction. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3505	Maritime Poetry	3 ch (3C) (W)
A study of Maritime poetry from its beginnings, with an emphasis on 20th century developments. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3506	Maritime Fiction	3 ch (3C) (W)
An overview of the variety of genres in Maritime fiction. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3507	Studies in Maritime Literature	3 ch (3C) (W)
A study of selected Maritime short fiction, poetry, essays, and novels of the 19 th and 20 th century. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3508	Canadian Literature WWII	3 ch (3C) (W)
A study of Canadian poetry, short fiction, criticism, and novels written before the Second World War. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3509	Canadian Literature after WWII	3 ch (3C) (W)
A study of Canadian short fiction, poetry, novels, and criticism written after World War II. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3512	American Short Fiction	3 ch (3S) (W)
A study of 19th and 20th Century American short fiction. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3515	20th Century American Novel	3 ch (3C) (W)
A study of 20th Century American novels. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3601	Introduction to Literary Theory	3 ch (3C) (W)
A historical survey of literary theory. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
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. <i>Prerequisite:</i> 9 ch of lower-level English or equivalent or permission of the instructor.		
ENGL3709	Children's Literature	3 ch (3C/WEB) (W)
An overview of children's literature. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		

SECTION F: SAINT JOHN COURSES

ENGL3713	Special Topics I	3 ch (3C) (W)
This course focuses on specialized areas of interest. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3714	Special Topics II	3 ch (3C) (W)
This course focuses on specialized areas of interest. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
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. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3802	Reading Film	3 ch (3C) (W)
This course will explore various ways of analyzing a variety of films. <i>Prerequisite:</i> 9ch of lower-level English, or permission of the instructor.		
ENGL3816	Studies in Indigenous Literature	3 ch (3C) (W)
A survey of selected texts by the Indigenous peoples of Turtle Island from pre-contact through to the present. for credit. As ENGL 3816 replaces ENGL3719, credit cannot be counted for both. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
ENGL3817	Imperial Encounters	3 ch (3C) (W)
An investigation into early North American writing and the ideological origins of settler colonial American nationhood(s), surveying a selection of narratives, journals, poems, transcripts, and political treatises penned by Indigenous Peoples, Africans, Europeans, and Americans from 1500-1800. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
ENGL3818	Early National U.S. Literature	3 ch (3C) (W)
Focusing on the production of powerful national tropes in nineteenth century U.S. literature. Considers how authors responded to criticisms coming out of Europe at this time that the U.S. had failed to develop its own literary voice. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
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. <i>Prerequisites:</i> 9ch of lower-level English and students must contact the instructor before enrolling.		
ENGL3903	Contemporary Drama	3 ch (3C) (W)
Studies a range of plays to illustrate the development of the dramatic tradition. <i>Prerequisite:</i> 9ch of lower-level English or equivalent, or permission of the instructor.		
ENGL3922	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. <i>Prerequisite:</i> 9 ch of lower-level English or equivalent or permission of the instructor.		
ENGL3925	Creative Writing II	3 ch (3C) (W)
Creative Writing exercises and workshoping. Students will work towards a longer project. <i>Prerequisites:</i> 9 ch in lower-level English or equivalent, or permission of the instructor.		

SECTION F: SAINT JOHN COURSES

ENGL3927 From Script to Performance 3 ch (3WS) (W)

This course integrates the study of drama as literature with the practical elements of theatrical production. As ENGL 3927 replaces ENGL 3801, credit cannot be counted for both. *Prerequisite:* 9ch of lower-level English or equivalent, or permission of the instructor.

ENGL4801 Honours Essay: Reading and Research 3 ch (3C) (W)

This course is devoted to the research portion of the honours project. Open only to Honours students.

ENGL4802 Honours Essay 3 ch (3C) (W)

An honours essay to be written based on work completed in 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 appropriately 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, summarizing, 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.

ENVIRONMENTAL ENGINEERING

NOTE: See beginning of [Section F](#) for abbreviations, course numbers and coding.

ENVE2011 Introduction to Environmental Engineering 4 ch (3C 2L) (W)

Students will learn about mass and energy balance for reacting and non-reacting environmental engineering systems under steady state and unsteady state conditions. Fundamentals of momentum, heat and mass transfer as applied in air and water pollution as well as thermodynamic and phase equilibria considerations, contaminant partitioning and transport in air, surface water and groundwater, and chemical reaction kinetics will be explored. Students will be introduced to life cycle analysis, application of ideal continuously stirred tank reactor (CSTR) and plug flow reactor (PFR) concepts in environmental engineering, as well as residence time distribution (RTD) and reactor non-idealities. Students will also participate in a design project. Credit cannot be counted for both ENVE 2011 and ENVT 2011. *Prerequisite:* CHEM 1872 and CHEM 1877. *Prerequisites must be passed with a minimum grade of C. Co-requisite:* MATH 2513

ENVE3121 Water Resource Engineering 4 ch (3C 1T)

A quantitative analysis of natural water systems and the development of these systems as a resource. Students will learn the components of the hydrologic cycle, quantitative analysis of stream flow, probability concepts

in water resources, reservoir design and operation, hydraulic properties and availability of groundwater, and storm water management. Credit cannot be counted for both ENVE 3121 and ENVT 3121. *Prerequisite:* ENVE 2011 with a minimum grade of C.

ENVE3123 Water Treatment Principles and Design 4 ch (3C 1T 3L*) (W)

Theoretical aspects of unit operations for water treatment with design applications. Topics include water characteristics and contaminants, coagulation, flocculation, sedimentation, filtration, adsorption, ion exchange, membrane processes, disinfection and disinfection by-products, and management of water treatment residuals. Laboratory procedures include: settling operations, filtration, aeration, and adsorption. Credit cannot be counted for both ENVE 3123 and ENVT 3123. *Prerequisite:* ENVE 2011 with a minimum grade of C.

ENVE3133 Hydraulics and Hydrology 3 ch (3C 1T)

The hydrologic processes of precipitation and snowmelt, evapotranspiration, ground water movement, and surface and subsurface runoff are examined. Water resource sustainability issues are discussed, including water usage and water shortages, climate change impacts, land use impacts, and source water protection. Conceptual models of the hydrologic cycle and basics of hydrologic modelling are developed, including precipitation estimation, infiltration and abstraction models, runoff hydrographs, the unit hydrograph method and the Rational method. Methods for statistical analysis of hydrologic data, concepts of risk and design, and hydrological consequences of climate change for design are introduced. Principles of open channel hydraulics are introduced. Energy and momentum principles are studied with application to channel transitions, critical flow, choked flow, and hydraulic jumps. Credit cannot be counted for both ENVE 3133 and ENVT 3133. *Prerequisite:* CE 2703 with a minimum grade of C.

ENVE3231 Contaminants and Pollutants Transport in the Environment 4 ch (3C 1T)

Students explore the physical phenomena governing the transport of contaminants in the environment: diffusion, advection, dispersion, sorption, interphase transfer. Students learn derivation and application of transport equations in air, surface and groundwater pollution; analytical and numerical solutions, as well as equilibrium partitioning of contaminants among air, water, sediment, and biota. Credit cannot be counted for both ENVE 3231 and ENVT 3231. *Prerequisite:* (CHEM 1872 and CHEM 1877) or equivalent, and CE 2703 (all prerequisites must be passed with a minimum grade of C).

ENVE3322 Wastewater Treatment Principles and Design 4 ch (3C 1T 3L*) (W)

This course covers the theoretical aspects of unit operations and processes for wastewater treatment with design applications. Topics include wastewater characteristics, flow rates, primary treatment, chemical unit processes, biological treatment processes, advanced wastewater treatment, disinfection, biosolids treatment and disposal. Laboratory procedures involve activated sludge, anaerobic growth, chemical precipitation, disinfection. Credit cannot be counted for both ENVE 3322 and ENVT 3322. *Prerequisite:* ENVE 3121 and ENVE 3123 with a minimum grade of C.

ENVE3513 Soil Mechanics 4 ch (3C 3L*)

The course covers essential concepts in soil mechanics. Topics include compaction, seepage theory, groundwater, stresses and strains in soils, effective stress concept, consolidation, shear strength of soils, and earth pressure theory. The course emphasizes the learning of soil mechanics concepts. Some examples of application of these concepts to geotechnical engineering practice are also provided to reinforce these concepts. Laboratory practicum component of the course provides hands-on experience of laboratory tests that are commonly used for determination of geotechnical properties of soils. Credit cannot be obtained for both ENVE 3513 and CE 2113. Credit cannot be counted for both ENVE 3513 and ENVT 3513. *Prerequisite:* GEOL 1044 with a minimum grade of C. *Co-requisite:* CE 2703

ENVE3665 Introduction to Environmental Law 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. Credit can only be obtained for one of ENVE 3665, ENVT 3665 and BIOL 3665. *Prerequisite:* A minimum of 60 ch

ENVE4040 Environmental Engineering Design Project 7 ch (2C 4L) (W)

Teams of students develop professional level experience through a design project that incorporates fundamentals acquired in previous mathematics, science, engineering, and complementary studies courses. A final report and oral presentations are required. *Prerequisite:* ENVE

3121 and ENVE 3231 (all prerequisites must be passed with a minimum grade of C). This course is only open to BSE ENVE.

ENVE4231 Contaminant Hydrogeology 4 ch (3C 1T)
This course covers the theory of flow through porous media, contaminant transport, unsaturated and multiphase flow, numerical modeling, and site remediation and remediation technologies. Site investigations incorporate: geology, hydrology and chemistry. Credit cannot be counted for both ENVE 4231 and ENVT 4231. *Prerequisite:* ENVE 2011 and ENVE 3231. All prerequisites must be passed with a minimum grade of C.

ENVE4322 Waste Management 4 ch (3C 1T)
Students will learn about municipal, hazardous, and mine waste management, as well as waste composition and potential impacts, collection and transport, recycling and reuse, biological and thermal treatments, isolation. Students will also explore integrated waste management planning. Credit cannot be counted for both ENVE 4322 and ENVT 4322. *Prerequisite:* ENVE 3123 and ENVE 3231. All prerequisites must be passed with a minimum grade of C.

ENVE4432 Air Pollution and Emission Control 4 ch (3C 1T 3L*) (W)
Students will learn about air pollutants, classification, sources, and effects. The course reviews ambient air quality objectives and monitoring, pollutant formation mechanisms in combustion, major pollutant categories and control methods and indoor air quality. Laboratory topics include: emissions from boilers and IC engines, particulate size distribution and control, and IAQ parameters. Credit cannot be counted for both ENVE 4432 and ENVT 4432. *Prerequisite:* CHE 2012 and ENVE 3121. All prerequisites must be passed with a minimum grade of C.

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 la 10^{ième} année de français. **NOTE:** Les étudiants qui ont réussi, FR 1304, FR 2203, FR 2304, FR 2204, FR 3203, ou FR 3204, n'obtiendront crédits académiques pour ce cours. Ce cours correspond aux objectifs du niveau A1 du Cadre européen commun de référence pour les langues (CECR).

FR1203 Communicating in French I 3 ch (3C)
Introductory French course for students with no more than Grade 10 core French. **NOTE:** Students who have completed FR 1304, FR 2203, FR 2204, FR 2304, FR 3203, or FR 3204 will not obtain academic credit for this course. This course is aligned with the objectives of level A1 of the Common European Framework of Reference for Languages (CEFR).

FR1204 Communication en français II 3 ch (3C)
Suite de FR 1203. Développement et exploration de la communication linguistique et des différences culturelles. Ce cours correspond aux objectifs du niveau A1 du Cadre européen commun de référence pour les langues (CECR). *Prerequisite:* FR 1203. **NOTE:** Les étudiants qui ont réussi FR 1304, FR 2203, FR 2204, FR 2304, FR 3203, ou FR 3204, n'obtiendront crédits académiques pour ce cours.

FR1204 Communicating in French II 3 ch (3C)
Continuation of FR 1203. Develops and explores language communication and culture differences. This course is aligned with the objectives of level A1 of the Common European Framework of Reference for Languages (CEFR). *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. Ce cours correspond aux objectifs du niveau B1 et B2 du Cadre européen commun de référence pour les langues (CECR). Ce cours comporte aussi une introduction à la littérature. **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. This course is aligned with the objectives of levels B1 and B2 of the Common European Framework of Reference for Languages (CEFR). This course offers an introduction to the study literature. **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. *Prerequisite:* FR 1204 ou équivalent. Ce cours correspond aux objectifs du niveau A2 du Cadre européen commun de référence pour les langues (CECR). **NOTE:** Les étudiants qui ont réussi FR 1304, FR 2304, FR 3203, ou FR 3204, n'obtiendront 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. This course is aligned with the objectives of level A2 of the Common European Framework of Reference for Languages (CEFR). **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. Ce cours correspond aux objectifs du niveau A2 du Cadre européen commun de référence pour les langues (CECR). *Prerequisite:* 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. This course is aligned with the objectives of level A2 of the Common European Framework of Reference for Languages (CEFR). *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 prépare les étudiants à l'évaluation des compétences linguistiques du ministère de l'Éducation postsecondaire. Formation et Travail du Nouveau-Brunswick, ainsi qu'aux examens d'évaluation des compétences linguistiques en français des employés des secteurs publics, provincial et fédéral. *Prerequisite:* 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. *Prerequisite:* FR 1304, ou avec la permission du professeur. Ce cours correspond aux objectifs du niveau B1 et B2 du Cadre européen commun de référence pour les langues (CECR). Ce cours intègre des études de textes littéraires. **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. This course is aligned with the objectives of levels B1 and B2 of the Common European Framework of Reference for

SECTION F: SAINT JOHN COURSES

Languages (CEFR). This course integrates the study of literary texts.
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. *Préquis:* 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. *Préquis:* 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. *Préquis:* 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 présenté le processus acquisition de la langue avec application au français. Les sujets de discussion influent l'acquisition de la langue maternelle (l'hypothèse de l'IP) et l'acquisition du français comme langue seconde en situations d'immersion et de bilinguisme. *Préquis:* 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 paramétriques en syntaxe. *Préquis:* aucun sauf pour les étudiant(e)s du programme de français, qui doivent avoir fini FR 2204, ou FR 2304, ou un cours équivalent.

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.

FR3434 Les mots et leurs sens 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 cœur de cette étude sur l'impact quotidien de l'oral et de l'écrit dans la communication. *Préquis:* 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 langagière 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. *Préquis:* 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.

FR3513 La littérature d'enfance et de jeunesse dans le monde francophone 3 ch (3C)

Une exploration de la littérature d'enfance et de jeunesse à travers des courtes histoires, des bandes dessinées et des récits oraux provenant de diverses régions francophones.

FR3513 Children's and Youth Literature in the French Speaking World 3 ch (3C)

An exploration of children's and youth literature in the form of short stories, comics, and oral narratives from various Francophone regions.

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. *Préquis:* 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. *Préquis:* FR 2204, FR 2304 ou équivalent.

FR3524 Contemporary French African and Caribbean Literatures 3 ch (3C)

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 littéraire ainsi que ses implications socioculturelles dans le monde francophone, surtout en Afrique subsaharienne, au Maghreb et dans le Antilles françaises. Il souligne le prestige et le rôle social du conteur, mais aussi l'influence de la tradition orale sur la littérature francophone. *Préquis:* FR 2204, FR 2304, ou équivalent.

FR3614	Auteurs de dix-huitième siècle	3 ch (3C)
Étude de textes représentatifs de quelques auteurs français importants du dix-huitième siècle. <i>Prérequis:</i> 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. <i>Prerequisite:</i> 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. <i>Prérequis:</i> 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. <i>Prerequisite:</i> 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. <i>Prérequis:</i> 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. <i>Prerequisite:</i> FR 2204 or FR 2304, or equivalent.		
FR3626	Chefs d'oeuvre en littérature	3 ch (3C)
Étude de textes fondateurs reconnus comme classiques dans la tradition littéraire de langue française à travers l'histoire, les genres et les cultures. <i>Prérequis:</i> 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 in French across history, genres and cultures. <i>Prerequisites:</i> 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. Description, analyse, théorie et évolution. <i>Prérequis:</i> 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. <i>Prerequisites:</i> FR 2204 or FR 2304, or equivalent.		
FR3704	Aspects des cultures francophones internationales	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. <i>Prérequis:</i> 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. <i>Prerequisite:</i> 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. <i>Prérequis:</i> 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 identities. From their origins to the present, attention will be given to the historical, social and artistic expressions of these cultures. <i>Prerequisite:</i> FR 2204 or FR 2304, or equivalent.		
FR3724	Aspects de la culture Québécoise	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. <i>Prérequis:</i> 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		

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will be given to contemporary issues in the Quebec society. *Prerequisite:* FR 2204 or FR 2304, or equivalent.

FR3734	Littérature francophone et Cinéma	3 ch (3C)
Ce cours porte sur les interactions entre l'oeuvre littéraire francophone et son adaptation cinématographique. Il consiste particulièrement en une analyse comparative des séquences narratives, de la représentation et de l'interprétation. <i>Prérequis:</i> 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. <i>Prerequisite:</i> 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. <i>Prerequisite:</i> FR 2204 or FR 2304, or equivalent.		
FR3744	La Francophonie et les médias	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. <i>Prérequis:</i> 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. <i>Prérequis:</i> 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. <i>Prerequisites:</i> FR 2204 or FR 2304, or equivalent.		
FR3824	Le théâtre au Canada français	3 ch (3C)
De Gratien Gélinas à 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. <i>Prérequis:</i> 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. <i>Prerequisite:</i> 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. <i>Prérequis:</i> 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. <i>Prerequisite:</i> FR 2204 or FR 2304, or equivalent.		
FR4203	Le Français en contexte	3 ch (3C)
Destiné à reproduire des situations de la vie quotidienne et d'enjeux contemporains afin de motiver l'étudiant à élargir ses connaissances de niveau avancé et à en faire usage dans diverses conditions. <i>Prérequis:</i> FR 3203 ou FR 3204 ou équivalent.		
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		

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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. *Préquis:* 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. *Préquis:* FR 3324 ou équivalent

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. *Préquis:* 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. *Préquis:* FR 2204 ou FR 2304, ou équivalent.

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 films choisis illustrent les nouveaux genres, thèmes et styles qui incarnent les complexités et les défis nouveaux dans un monde francophone soumis aux exigences de la mondialisation. *Préquis:* FR 2204 ou FR 2304, ou avec la permission du professeur.

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 Cinéma dans la France contemporaine 3 ch (3C)

Par une sélection de films représentatifs, ce cours examine les thèmes majeurs, les styles et les auditoires visés par les cinéastes aujourd'hui. Il décrit la société française du XXI^e siècle, dans ses préoccupations quotidiennes, ses idéaux culturels et ses rapports au monde extérieur. *Préquis:* FR 2204, FR 2304 ou équivalent.

FR4544 Aspects of Cinema in Contemporary France 3 ch (3C)

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.

FR4584 Récits de migration au Québec 3 ch

Ce cours examine les récits de migration au Québec des années 1980 à nos jours et leur relation avec la mémoire, l'appartenance, l'identité et l'hybridité culturelle. *Prerequisite:* FR 2204 or FR 2304, ou équivalent

English Version

FR4584 Migration Narratives in Québec 3 ch

This course examines narratives of migration in Québec from the 1980s to the present day, and their relation to memory, belonging, identity and cultural hybridity. *Prerequisite:* FR 2204 or FR 2304, or equivalent

En Français

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) (EL)

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.

GEOL2201 Biogeology I (Systematic Palaeontology) 5 ch (3C 2L)

Morphology, palaeoecology 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.

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 geoarchaeology. Enrolment is limited. *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 Information Literacy 3 ch (3C 2L)

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, quantitative (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.

HEAL2155 Biopharmaceutics (Cross-Listed with CHEM 2455) 3 ch (3C)

The course will provide an overview of the pharmaceutical industry, the process of drug discovery and optimization, an overview of the properties and biological activity of therapeutic substances, and case studies of select drug classes such as antibiotic, anti-ulcers drugs and/or others. *Prerequisites:* CHEM 2421 with a minimum grade of C

HEAL3001 History and Structure of the Canadian Health Care System 3 ch (3C)

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

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Canadians. NOTE: Credit will only be given to one of HEAL 3001, HSCI 3061, or NURS 3061. *Prerequisites:* HEAL 1001, HEAL 1002, or permission of the instructor.

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 1001, HEAL 1002 and one of HIST 2514 or INDG 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.

HEAL3004 Implementation Science 3 ch (3C)

This course will focus on how behavioural, physical, and technical strategies facilitate the translation of evidence into practice. Theories from disciplines including psychology and information systems design will be used to explain the multifactorial perspective of implementation science. Effective intervention implementation within various organizations and stakeholders will be explored. Topics such as intervention usability, user motivation for adoption, and resource utilization efficiency with the goal of improving health will be discussed. *Prerequisites:* Completion of 60 ch

HEAL3005 Child Rights and Child Health 3 ch (3C) W

This course will provide an overview and outline the historical evolution of children's rights. The United Nations Convention on the Rights of the Child (CRC), the four rights principles that the CRC is grounded upon will be covered. The 9 different clusters of rights under the CRC will be examined in relation to health. The relationship between human rights and children's health and development and the rights-based approach to child health will be discussed. *Prerequisites:* Completion of 30 ch

HEAL3006 Human Nutrition: Global Issues 3 ch (3WEB)

The course will focus on the pillars of the science of nutrition and the essential components of healthy eating. The role of macronutrients (fat, protein, carbohydrates) and micronutrients (the major classes of fats and minerals) on overall energy intake and their role in our health will be examined. Specific global concerns relevant to nutrition will be explored; for example, the discussion of macronutrients will include a focus on undernutrition and obesity at both ends of the caloric intake spectrum and how the global community struggles with it. *Prerequisites:* BIOL 1205 and CHEM 1072

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 Neuropsychology 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.

HEAL3104 Introduction to Epidemiology 3 ch (3C)

Epidemiology is a scientific discipline concerned with the distribution and determinants of health and disease in populations. This course introduces the principles and core concepts of epidemiology to examine how we measure disease risk and design studies to shed light on the etiology of and risk factors for disease. This course will cover topics such as basic principles of epidemiology, measures of disease frequency, epidemiologic study designs, bias, confounding, screening, causality, and ethical issues in epidemiologic research. *Prerequisites:* STAT 2263

HEAL3106 Cardiovascular Health and Disease 3 ch (3C)

This course will provide a comprehensive overview of cardiovascular physiology, followed by examining alterations of cardiovascular function in various diseases on a basic and clinical level. Topics of interest include vascular disorders, cardiomyopathies, coronary heart disease, arrhythmias, and circulatory failure. *Prerequisites:* BIOL 2065 or BIOL 2245, or permission of the instructor

HEAL3106 Improving Healthcare Systems 3 ch (3C) EL **(Cross Listed with BA 3105)**

Improving Healthcare Systems provides students with the knowledge and skills needed to enhance efficiency and the patient experience in hospital administration. Throughout this course, students will explore creative problem-solving, strategic thinking, and design thinking techniques, all applied to healthcare management. By the end of the course, students will be well-equipped to address the complex challenges of healthcare administration, leading to improved patient experiences and better care outcomes. *Prerequisites:* BA 1501 and successful completion of 60

HEAL4001 Transformation Through Collaboration & Innovation I 3 ch (3C) W

This course explores both collaboration and innovation at the intersection of the three majors in the Bachelor of Health degree (namely, Society and Health, Management in Health, and Biomedical Sciences and Health). This integrated 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 2003, and completion of 90ch.

HEAL4002 Transformation Through Collaboration & Innovation II 3 ch (3C) W

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) W

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) W

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.

HEAL4007 Experiences in Health 3 ch (1.5C/PRAC) EL

In this interdisciplinary course, students will have the opportunity to work in an organization, institution or business related to interdisciplinary health. Students will be required to complete integrative reflections and

community analyses that focus on different aspects of health: biomedical science, societal, and management. 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 90 credit hours. Admittance is competitive and dependent on the availability of suitable workplace internships.

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, that 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:* One of PSYC 2712 or PSYC 3711, and one of PSYC 3712 or PSYC 3723

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.

HEAL4104 Applied Neuroscience 3 ch (3C) W (Cross-Listed with PSYC 4434)

Applied neuroscience explores the multidisciplinary applications of neuroscience in real-world settings, drawing on knowledge from many areas of science, including psychology, biology, chemistry, and philosophy. Students will learn about neuroscience techniques, and how they are used to study disease mechanisms and improve treatments. There will be a focus on theories underpinning our current understanding of the neuroscientific and psychological foundations of mental health and human behaviour. *Prerequisites:* PSYC 2712, and (PSYC 2102, HEAL 2003, or an alternate research methods course approved by the instructor)

HEAL4105 Cell Signalling 3 ch (3C)

This course will examine the principles of signal transduction including reception, cascades, and cytoplasmic/nuclear responses. Emphasis is placed on physiological and pathological signaling in select diseases including diabetes, inflammation, and cancer. Students will hone key skills including scientific communication and critical analysis of primary literature. *Prerequisites:* Two of BIOL 2015, BIOL 2065, BIOL 2245, BIOL 3853, 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 (3C/WEB)

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 (3C/WEB) (Cross-Listed: NURS 3061)

Facilitates an understanding of the history and organization of the Canadian healthcare system, current healthcare issues, and policy and government legislation that affects healthcare. *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/WEB) (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/WEB) (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.

SECTION F: SAINT JOHN COURSES

HIST1701 The Medical Experience 3 ch (3C) (W)

This course introduces students to the history of health and medicine in western traditions. Using the medical experience with various epidemics (bubonic plague, smallpox, yellow fever, cholera, malaria, tuberculosis, pandemic influenza, and HIV/AIDS) students will develop an appreciation for historical thinking using health as an entry point.

HIST2101 Europe & the World before 1800 3 ch (3C) (W)

A survey of important historical events prior to the modern age.

HIST2102 Europe & the 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 America 3 ch (3C) (W) **(Cross-Listed: POLS 2311)**

Provides an overview of Latin American history and politics from colonialization to the 20th century.

HIST2514 Colonialism and Indigenous Peoples in America 3 ch (3C) (W)

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 Indigenous Peoples in North America Since 1800 3ch (3C) (W)

A History of Indigenous Peoples focusing on economic, political, social, and cultural developments in the post-colonial context.

HIST2701 Canadian Healthcare 3 ch (3C) (W)

This course explores changes in health and illness care in Canada over four centuries, with an emphasis on the twentieth century. Topics include; historical development of medicine, nursing, social work, pharmacy and public health as interrelated yet distinct spheres of practice and historical events and movements.

HIST2989 History of Fashion 3 ch (3C/WEB) (W)

This course explores the design, social context, and natural components of garments worn from early civilizations to the designs of haute couture. Students will gain a nuanced understanding of how clothing has played a pivotal role in shaping cultures and societies.

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, Indigenous 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 Avignon 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.

HIST3951 Digital History 3 ch (3C/S) (W) (EL)

Digital history, the use of emerging technologies to the study of history, is an exciting new historical methodology. In this course, we analyse digital history literature while using digital methodologies to collect, evaluate, and produce historical knowledge. Students will get hands-on experience with a wide range of digital skills and use these new methods to develop a final digital history project. This course will introduce students to historical geographic information systems (HGIS), quantitative database analysis using structured query language (SQL queries), and text mining. We will also examine the implications of digital storage and digitization in archives which is changing how we research, preserve, and access historical material. *Prerequisite:* Suitable for students from any discipline who have completed at least twenty term-courses.

HIST3977 Sex, Drugs, and Rock & Roll: the 1960s in Historical Perspective 3 ch (3C) (W)

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 1890s to 1945 (O) 3 ch (3C) (W)

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 Indigenous 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 Indigenous People, beginning in the early National period. The history of Indigenous 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.

SECTION F: SAINT JOHN COURSES

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/ Tourism and Travel 3 ch (3C)

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/WEB) (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 Professional Communication I (O) 3 ch (3C)

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 Professional Communication II (O) 3 ch (3C)

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.

INDIGENOUS STUDIES**INDG1002 Introduction to Indigenous Studies 3 ch (3C/WEB) (W)**

A multidisciplinary approach to the history and cultures of Indigenous Peoples focusing on interactions with European settlers. Emphasizes the myriad challenges faced by First Nations, Métis and Inuit Peoples within the historical and contemporary contexts of European colonialism in North America. Focus is also on decolonization as it pertains to governance and territorial rights, health and community, and language and education.

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 or MATH 1823. (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, or MATH 1823.

SECTION F: SAINT JOHN 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. *Prerequisite:* A minimum grade of C in MATH 1003 or a minimum grade of B 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 A 120 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 2513/MATH 2523. *Prerequisite:* MATH1013 with a minimum grade of C.

MATH2013 Intermediate Mathematics II (O) 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 with a minimum grade of C.

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 with a minimum grade of C 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. **NOTE:** Credit will be given for courses in only one of the sequences MATH 2003/MATH 2013 or MATH 2513/MATH 2523. *Prerequisites:* MATH 1013 and either MATH 1503 or MATH 2213 with a minimum grade of C.

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. **NOTE:** Credit will be given for courses in only one of the sequences MATH 2003/MATH 2013 or MATH 2513/MATH 2523. *Prerequisite:* MATH 1013 with a minimum grade of C.

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:** This course is intended for students within the Faculty of Business. For certain programs outside of the Faculty of Business this course carries no credit. Please consult with a faculty advisor. Credit will not be given for MATH 2853 if the student previously obtained credit for MATH 2513. *Prerequisite:* MATH 1853 with a minimum grade of C.

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, with a minimum grade of C 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 with a minimum grade of C, or permission of the 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) with a minimum grade of C 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 with a minimum grade of C.

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) with a minimum grade of C.

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 be granted for only one of CE 2913, CS 3113, ECE 2412, MATH 3413 and MATH 3414. *Prerequisites:* One of (CS 1003, CS 1063, CS 1073 or CMPE 1003) and MATH 1013; and either 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 with a minimum grade of C.

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), with a minimum grade of C.

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, with a minimum grade of C.

MATH3753 Applications of Mathematical Models (O) 3 ch (3C)

Provides an overview of mathematical modelling strategies for particular applications. Introduces students in a variety of disciplines to mathematical modelling based problem solving. General concepts such as stochastic vs. deterministic modelling 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 2793, PSYC 3913, MATH 2013, MATH 2513, MATH 2523 with a minimum grade of C; 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-interest securities, effects of tax, ordinary shares, bonds. Deterministic models for term structure dynamics. *Prerequisite:* MATH 1003 or MATH 1853 with a minimum grade of C.

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 parity, hedging, arbitrage, risk and immunization. *Prerequisites:* MATH 3901 with a minimum grade of C.

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:* Permission of the 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) with a minimum grade of C, or permission of the instructor.

MATH4993 Project in Mathematics 3 ch (1S2R)

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:* A minimum of 90 credit hours or permission of the instructor.

MECHANICAL ENGINEERING**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 with a minimum grade of C.

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 1021 and APSC 1025) or APSC 1023. All prerequisites must be passed with a minimum grade of C.

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 CE 2023. Prerequisites must be passed with a minimum grade of C.

ME2125 Mechanics of Materials Design Project 1 ch (2L*) (W) (EL)

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 CE 2023 Prerequisites must be passed with a minimum grade of C. *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 1021 and APSC 1025) or APSC 1023 or ME 2003. Prerequisites must be passed with a minimum grade of C. *Recommended:* CMPE 1003 or CS 1003 or other introductory programming course

ME2145 Kinematics and Dynamics Design Projects 1 ch (2L*) (W) (EL)

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 1021 and APSC 1025) or APSC 1023 or ME 2003. Prerequisites must be passed with a minimum grade of C. *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. Prerequisites must be passed with a minimum grade of C. *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

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; dimensional analysis; and liquid flow in piping networks with pumps and turbines. Pressure and flow measurement and experimental uncertainty. *Prerequisite:* (APSC 1021 and APSC 1025) or APSC 1023. Prerequisites must be passed with a minimum grade of C. *Co-requisite:* MATH 2513

SECTION F: SAINT JOHN COURSES

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

NURS1009 Academic Writing for Health Disciplines 1 ch (1C) (W)

Introduction to the elements of scholarly writing and information literacy for health disciplines. Basic principles of scholarly writing, use of American Psychological Association (APA) style, and the writing process will be explored. Students with credit for NURS 2019 cannot count credit for NURS 1009 or NURS 1011.

NURS1011 Nursing as a Profession 2 ch (2C)

Introduction to the foundations, heritage and practices of nursing as a profession. Examines UNB nursing curriculum and philosophy. Students with credit for NURS 2019 cannot count credit for NURS 1009 or NURS 1011.

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:* A minimum grade of C in NURS 1032 and 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:* A minimum grade of C in NURS 1011 and NURS 1032. *Co-requisite:* NURS 1235.

NURS1235 Clinical Practice: Nursing and Wellness 3 ch (3PRAC)

Within various clinical settings, explores the concepts of wellness, health, and illness within the framework of primary health care. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* A minimum grade of C in NURS 1032 and NURS 1011. *Co-requisites:* NURS 1225, NURS 1041.

NURS 1333 Wolokéhtimkîl-Indigenous Health and Healing 2 ch (2C)

The focus of this course is to build an understanding of Indigenous health, community wellness, and cultural safety to promote equitable healthcare practice and policy. In the course, students will examine Indigenous models of health and healing, storytelling, and tools for allyship. This course will be graded as Credit/No Credit (CR/NCR).

NURS2011 Concepts for Professional Nursing Practice 2 ch (2C)

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.

NURS2019 Nursing Practice & Academic Writing 3 ch (3C)

Introduction to core nursing concepts, nursing standards, academic writing, professional issues (ethics, law, collaboration), and primary health care, with particular emphasis on health promotion and disease prevention. Students with credit for NURS 2019 cannot also count credit for NURS 1009 or NURS 1011. This course is intended for Step Up to Nursing 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 (4PRAC)

An integrative practice experience with young families and/or individual client and their families living with chronic health challenges. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* A minimum grade of C in NURS 2132, NURS 2135, NURS 2157, NURS 2177, NURS 2145, NURS 2189, BIOL2831, 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:* A minimum grade of C in NURS 1009, NURS 1011, NURS 1032, NURS 1041, NURS 1225, and NURS 1235.

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:* A minimum grade of C in NURS 1009, NURS 1011, NURS 1032, NURS 1041, NURS 1225, and NURS 1235.

NURS2145 Mental Health Challenges 3 ch (3C)

Explores the experiences of persons living with mental illnesses and examines related nursing therapeutics. *Co-requisite:* NURS 2157. NURS 2135, and BIOL 2831.

NURS2157 Clinical Practicum I 3 ch (3PRAC)

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. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* A minimum grade of C in NURS 1009, NURS 1011, NURS 1032, NURS 1041, NURS 1225 and NURS 1235. *Co-requisites:* NURS 2135, and 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:* A minimum grade of C in NURS 1009, NURS 1011, NURS 1032, NURS 1041, NURS 1225 and NURS 1235. *Co-requisites:* NURS 2135 and BIOL 2831.

NURS2189 Clinical Practicum II 4 ch (4PRAC)

Provides students with the opportunity to apply theory and acquire skills in practice environments with a focus on young families and mental health challenges. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* A minimum grade of C in NURS 2157, NURS 2177 and NURS 2135.

NURS3061 Issues in the Canadian Health Care System (Cross-Listed: HSCI 3061) 3 ch (3C)

Facilitates an understanding of the history and organization of the Canadian healthcare system, current healthcare issues, and policy and government legislation that affects health. *Prerequisites:* A minimum grade of C in NURS 2063 for BN students, or a minimum grade of C in BIOL 2831, NURS 1009, NURS 2011, NURS 2132, NURS 2051, PSYC 1003 and STAT 2263 for BN/LPN students. *Co-requisites:* NURS 3092.

NURS3064 Community and Population Health Nursing 3 ch (3C)

The course examines the role of community health nurses within the context of population health. There is a focus on illness prevention, health promotion, and primary health care. Community development strategies are explored in terms of a trauma-informed, evidence-based, and harm-reduction approach. *Prerequisites:* A minimum grade of C in NURS 2063 for BN students, or a minimum grade of C in BIOL 2831, NURS 1009, NURS 2011, NURS 2132, NURS 2051, PSYC 1003 and STAT 2263 for BN/LPN students. *Co-requisites:* NURS 3067 and NURS 3092.

NURS3067 Clinical Practicum: Community and Population Health Nursing 4 ch (4PRAC)

The population health approach allows for the application of theory while acquiring skills in a community practice environment. Key concepts include health promotion, community development, and collaborative health-related change projects. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* A minimum grade of C in NURS 2063 for BN students, or a minimum grade of C in BIOL 2831, NURS 1009, NURS 2011, NURS 2132, NURS 2051, PSYC 1003, and STAT 2263 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:* A minimum grade of C in all of NURS 2132, NURS 3061, NURS 3064, NURS 3067, NURS 3092, BIOL 2831, and BIOL 3251 *Co-requisite:* NURS 3073.

NURS3073 Clinical Practice: Acute Health Challenges 5 ch (5PRAC)

Complements and supplements NURS 3071. This course will be graded as Credit/No Credit (CR/NCR). *Co-requisites:* 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: A minimum grade of C in 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, and for BHS students: enrolment in a BHS major. For BN students, a minimum grade in C in all of NURS 2132, NURS 2135, NURS 2157, NURS 2177, NURS 2145, NURS 2189, NURS 2063, BIOL 2831, and BIOL 2852; and for LPN Bridge students: a minimum grade of C in BIOL 2831, NURS 1009, NURS 2011, NURS 2132, NURS 2051, PSYC 1003, and STAT 2263.

NURS3709 Clinical Nutrition 3 ch (3C)

Provides knowledge on nutritional principles and let their role in maintaining and restoring health. *Prerequisites:* A minimum grade of C in NURS 2063 or all required LPN bridge courses for BN/LPN students.

NURS4142 Issues and Leadership in Healthcare (Cross-Listed: HSCI 4142) 3 ch (3C)

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. **NOTE:** Credit will only be given to one of NURS 4142 or HSCI 4142. *Prerequisite:* Enrolment in a BHS major, or with instructor permission. For BN, a minimum grade of C in NURS 3061, NURS 3064, NURS 306, NURS 3092, NURS 3071, NURS 3073, NURS 3081, and NURS3709.

NURS4152 Concentrated Clinical Practice III 12 ch (12PRAC)

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. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisites:* All preceding required credits for the BN program.

NURS4234 Independent Study 3 ch (3C)

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:* A minimum grade of C in NURS 3073. *Co-requisite:* NURS 4322.

NURS4322 Clinical Practicum: Nursing in Complex Situations 5 ch (5PRAC)

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 are expected to care for families in multiple settings, including their home and hospital. Students will integrate and apply the theory examined in NURS 3071 and NURS 4321 in this practice setting. This course will be graded as Credit/No Credit (CR/NCR). *Prerequisite:* A minimum grade if C in NURS 3073. *Co-requisites:* NURS 4321

PHILOSOPHY

PHIL1001 Introduction to Philosophy I 3 ch (3C)

A survey of Western Philosophy from the Ancient Greeks and Middle Ages to the Early Modern period.

PHIL1002 Introduction to Philosophy II 3 ch (3C)

Survey of Western Philosophy from the Early Modern period to Contemporary Philosophy. *Prerequisite:* PHIL 1001.

PHIL1053 Introduction to Logic, Reasoning and Critical Thinking 3 ch (3C/WEB)

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 Political Philosophy 3 ch (3C) (W)

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 logic and in the logic of qualification 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-Socratics 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:* One term-course in Philosophy 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) (W)

An in-depth study of the origins of and subsequent developments in Contemporary Continental Philosophy: the European philosophical tradition in Western philosophy. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3116 Wittgenstein and Early Analytic Philosophy (O) 3 ch (3C) (W)

A study of the early period of Analytic Philosophy with emphasis on achievement and influence of Ludwig Wittgenstein's early work, *Tractatus-Logico Philosophicus*, and its relations to the thought of Gottlob Frege, Bertrand Russell, Frank Ramsey, and the Logical Positivist movement. *Prerequisite:* One term-course in Philosophy 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.

SECTION F: SAINT JOHN COURSES

PHIL3133 Health Care in Ethics I 3 ch (3C/WEB) (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.

PHIL3234 Wittgenstein's "Philosophical Investigations" 3 ch (3C) (W)

The second development of Ludwig Wittgenstein's philosophy, which focuses attention on ordinary language usage, inaugurated a new phase of philosophy within the Analytic Tradition. Topics include philosophy as therapy, language games, rule-following, private language, and the later Wittgenstein's influence on subsequent philosophers. *Prerequisite:* One lower-level 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 (3C)

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 Existentialism and the Human Condition 3 ch (3C) (W)

A study of 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 Early Modern Philosophy from Descartes to Hume 3 ch (3C) (W)

A study of the Rationalist and Empiricist traditions of the 17th and 18th century from Descartes to Hume. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3852 German Philosophy from Kant to Nietzsche 3 ch (3C) (W)

A study of late 18th and 19th century German philosophy, focusing on such figures as Kant, Hegel, Marx, and Nietzsche. *Prerequisite:* One term-course in Philosophy or permission of the instructor.

PHIL3901 Special Topics I 3 ch (3C/R)

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 (3C/R)

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. 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. *Co-requisites:* One of MATH 1001, MATH 1003 or permission of instructor.

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. 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. *Prerequisite:* PHYS 1011. *Co-requisites:* One of MATH 1001, MATH 1003 or permission of instructor.

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.

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/WEB) (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) (W)
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 in Canadian Politics 3 ch (3C) (W)
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.

SECTION F: SAINT JOHN COURSES

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 Indigenous Government in Canada 3 ch (3C/S) (W)
Examines the politics and administration of the relationship between Indigenous peoples and the Canadian state with a focus on such topics as traditional governance, self-government, and self-determination.

POLS3292 Politics of Indigenous Self-Government 3 ch (3C/S) (W)
A systematic analysis of the principles, structures and institutions of traditional and contemporary Indigenous self-government in Canada.

POLS3311 Government of the United States 3 ch (3C) (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 it 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.

SECTION F: SAINT JOHN COURSES

POLS3603 Critical Perspectives on International Relations Theory 3 ch (S) (W)

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 (3C/S) (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.

POLS4216 Politics of Sustainability 3 ch (3C) (W)

This course addresses the nexus between the environment and health, and the social, political, and economic conditions influencing health and environmental outcomes and vice versa. It provides an account of the critical challenges to the environment, and their resulting effects on health, while exploring policies and community-based alternatives aiming at creating sustainable and healthy environments in an inclusive manner. *Prerequisite:* 3 ch of 1000-2000 level POLS courses.

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 (Cross-Listed: SOCI 4505) 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

PSYC 1003 is a prerequisite for PSYC 1004. PSYC 1004 is a prerequisite for all remaining Psychology courses.

NOTE: See beginning of [Section F](#) for abbreviations, course numbers and coding.

PSYC1003 Introductory Psychology I 3 ch (3C/WEB)

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/WEB)

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 program 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 are examined. Students will be required to complete an experiment. *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/WEB) (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 the changes in physical, cognitive, social and emotional development associated with aging beginning in young adulthood, and extending to late adulthood. We will examine such topics as physical and intellectual change, personality and social development, marriage, the family, vocational development, retirement and issues dealing with death and dying. *Prerequisite:* PSYC 2201 or PSYC 3201 or ED 3021

PSYC3323 Community Psychology and Mental Health 3 ch (3C/WEB)

Psychological perspectives are presented to inform our understanding of the nuances of psychological health/wellness, mental illness prevention and public health initiatives as they relate to mental health in the community and general population context. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3343 Human Sexuality 3 ch (3C/WEB)

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/WEB)

Introduction to the core counselling skills (e.g. paraphrasing, empathic responding used in the helping professions which will include active learning opportunities. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3383 Sensation and Perception 3 ch (3C)

Provides a broad introduction to sensation and perception. We will explore how we process and interpret information from our environments. Although the course will focus on visual and auditory perception, other sensory modalities may be discussed. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3393 Systems of Therapy 3 ch (3C/WEB)

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)

Examines foundational works in social psychology as well as most recent research that is of particular interest. Potential topics include the nature of love, conspiratorial beliefs, learned helplessness and prejudice. *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/WEB)

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 Diversity and Culture in Psychology (O) 3 ch (3C/WEB)

Examines how culture may affect a variety of human behaviours, beliefs and attitudes. Potential topics include variations in romantic relationships, morality, personality and social etiquette. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3461 Personality 3 ch (3C/WEB)

What do we mean when we refer to someone's personality? How do we look at and understand personality in research and clinical settings? The purpose of this course is to provide an initial overview and analysis of the major perspectives on human personality. By the end of this course, you will have a working understanding of major personality theories, as well as how these theories can be applied to real-world settings using empirical research and practice. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3493 Changing Behaviour 3 ch (3C/WEB)

There are many strategies to understand and change human behaviour. This course will focus on strategies drawn from learning theory and applied behavioural analysis, as well as other psychological principles that guide how we can influence behaviour change. *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/WEB)

This course provides an initial overview of the major types of psychological disorders. Emphasis will be placed on broad theoretical and clinical issues relevant to assessment, diagnosis and classification of adult disorders. Furthermore, etiology and phenomenology of a number of disorders will be explored. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3603 Attention and Memory 3 ch (3C)

This course provides an examination of cognitive processes involved in attention and memory. We will examine how we mentally prioritize certain objects based on our level of interest, and how prior experience influences these action. We will then consider how attention affects the encoding storage and subsequent recall of information in our memory systems. *Prerequisite:* PSYC 2693

PSYC3632 Motivation 3 ch (3C)

Focuses on human and/or animal motivational processes that initiate and guide goal-directed behaviours and the maintenance of these behaviors as important determinants of adjustment. *Prerequisites:* PSYC 1003 and PSYC 1004

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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 abilities, 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 (Cross-Listed: HEAL 3102) 3 ch (3C)

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/WEB)

An introduction to a devastating group of diseases which cause irreversible decline in cognitive functioning. 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 areas 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 and their influences upon cognition, behaviour and physical functioning. Such topics will be discussed in relation to their underlying biology, including the role of the brain in acute drug responses, long-term effects and dependence. In the process of doing so, the course will also address issues related to the history of psychoactive drug use, addiction, social impacts and legality. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3803 Industrial Psychology 3 ch (3C/WEB)

Application of psychological knowledge to business and industrial problems. *Prerequisites:* PSYC 1003 and PSYC 1004

PSYC3913 Introduction to Statistical Inference and Experimental Design in Psychology 3 ch (3C 1L)

This course provides an introduction to research design and statistical inference 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 2901

PSYC4021 Cognitive and Psychophysiological Research 3 ch (3C) (W)

This course is an applied research methods course focusing on cognitive and psychophysiological research. Students will focus on theoretical and methodological issues related to stress, cognitive function, motivation, individual differences and neuroscience. Students will also gain hands-on experience in creating experimental programs for studying these phenomena, and will have the opportunity to execute a research project using their programs. *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 (3C/S) (W)

An advanced course that will provide in-depth analysis of current theory, research and its applications in a specific area of psychology. *Prerequisite:* PSYC 1004 and completion of 60 ch in any discipline

PSYC4111 Conducting Research Studies 3 ch (3C/S) (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

PSYC4121 Basic Research I 3 ch (3C/S) (W)

This course permits students to become actively involved in a research project under the supervision of a faculty member. Requirements of this course may involve conducting a literature review, designing a research study, seeking ethical approval for research, collecting and analysing data, and writing a report with their results. The actual course requirements will be determined by the faculty member supervising the project. *Prerequisites:* PSYC 2102 and permission of the faculty supervisor

PSYC4122 Basic Research II 3 ch (3C/S) (W)

This course is a continuation of PSYC 4121. Requirements of this course may involve conducting a literature review, designing a research study, seeking ethical approval for research, collecting and analyzing data, and writing a report with their results. The actual course requirements will be determined by the faculty member supervising the project. *Prerequisites:* PSYC 4121 and permission of the faculty supervisor

PSYC4142 Honours Research Seminar 3 ch (3C/S)

In this seminar course, students will be exposed to 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. Grades are awarded as credit/no credit. *Prerequisite:* One of: PSYC 4021, PSYC 4111, PSYC 4121, PSYC 4122, PSYC 4201 and acceptance into the Psychology Honours Program

PSYC4143 Designing Research Proposals 3 ch (3C/S) (W)

Under the direction of a supervisor a student develops a proposal which is assessed and approved by the Department. A letter grade will be assigned. *Prerequisite:* One of: PSYC 4021, PSYC 4111, PSYC 4121, PSYC 4122, PSYC 4201 and acceptance into the Psychology Honours Program

PSYC4145 Honours Thesis 3 ch (3C/S) (W)

Under the direction of a supervisor a student conducts, completes, and defends the research. A letter grade will be assigned. *Prerequisite:* A grade of B+ or higher in PSYC 4143

PSYC4201 Special Topics in Experimental Psychology 3 ch (3C/S) (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 Program Evaluation 3 ch (3C) (W)

A seminar course focusing on review of the principles and methods used in planning and conducting program evaluations. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor

PSYC4263 Field Placement in Criminal Justice I 3 ch (3PRAC) (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 with a cumulative GPA of 3.0 (B) or higher. Grades are awarded as credit or no credit. *Prerequisites:* PSYC 3263 and PSYC 3493 and SOCI 2611 and SOCI 3614 and permission of the field placement co-ordinator

PSYC4264 Field Placement in Criminal Justice II 3 ch (3PRAC) (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 with a cumulative GPA of 3.0 (B) or higher. Grades are awarded as credit or no credit. *Prerequisites:* PSYC 3263 and PSYC 3493 and SOCI 2611 and SOCI 3614 and permission of the field placement co-ordinator

PSYC4265 Field Placement in Clinical Psychology 3 ch (3PRAC) (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. Grades are awarded as credit or no credit. *Prerequisites:* PSYC 3553, PSYC 3493, and either PSYC 3362 or PSYC 3393 and permission of the field placement co-ordinator

PSYC4266 Field Placement in Aging I 3 ch (3PRAC) (LE)

This field placement is designed to provide students with experience working with individuals living in retirement homes offering a range of options from independent to assisted living. Students will gain practical experience (e.g. working with recreation directors creating programming opportunities for residents; learning about proper approaches to interacting with residents, 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 students completing the Minor in Gerontology. Grades are awarded as credit or no credit. *Prerequisite:* PSYC 3293 and permission of the field placement co-ordinator

PSYC4267 Field Placement in Aging II 3 ch (3PRAC) (LE)

A continuation of PSYC 4266. This field placement is designed to provide students with experience working with individuals living in retirement homes offering a range of options from independent to assisted living. Students will gain practical experience. (e.g., working with recreation directors creating programming opportunities for residents; learning about proper approaches to interacting with residents, 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 students completing the Minor in Gerontology. Grades are awarded as credit or no credit. *Prerequisite:* PSYC 3293 and permission of the field placement co-ordinator

PSYC4293 Adolescence 3 ch (3C/S)

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 Testing and Measurement 3 ch (3C/L) (W)

A seminar course focusing on the major principles and other relevant issues in the development and application of psychological tests. Emphasis will be placed on the development, use, and evaluations of psychometric characteristics of tests in various spheres of life. *Prerequisite:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 3913

PSYC4463 Attachment and Human Relationships 3 ch (C/S) (W)

This seminar course focuses on an in-depth analysis of attachment theory, research, and its applications. An attachment framework will be used to explore topics such as interpersonal relationships, intimacy, loneliness, solitude, well-being, and attachment-based psychotherapeutic interventions. *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 optical illusions, spatial frequency representation, perceptual development, multi sensory perception, and 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/S) (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:* One of PSYC 2712 or PSYC 3711, and one of PSYC 3712 or PSYC 3723

PSYC4733 Cognitive Neuroscience 3 ch (3C/S) (W)

A seminar course examining the biological processes that underlie human cognition. Topics may include decision-making models, learning, categorization, and metacognition. Discussion surrounding the tools and methods used to study these topics will also be covered. This course will include written assignments and in-person presentations. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor, PSYC 2712, and either PSYC 3383 or PSYC 2693

PSYC4734 Applied Neuroscience 3 ch (3C) (W)**(Cross-Listed: HEAL 4104)**

Applied neuroscience explores the multidisciplinary applications of neuroscience in real-world settings, drawing on knowledge from many areas of science, including psychology, biology, chemistry, and philosophy. Students will learn about neuroscience techniques, and how they are used to study disease mechanisms and improve treatments. There will be a focus on theories underpinning our current understanding of the neuroscientific and psychological foundations of mental health and human behaviour. *Prerequisites:* PSYC 2712, and (PSYC 2102, HEAL 2003, or an alternate research methods course approved by the instructor).

PSYC4813 Substance Use Disorders 3 ch (3C/S) (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 addictive behaviours, as well as, issues of comorbidity, prevention, and intervention. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor

PSYC4833 Psychopharmacology 3 ch (3C) (W)

A seminar course focusing on the pharmacological treatments for various psychopathologies, including but not limited to depression, anxiety, obsessive-compulsive disorder, schizophrenia, dementia, and other related disorders. The emphasis will be on the neurological bases of these psychopathologies and the pharmacological agents used to manage them. This course will include written assignments and in-person presentations. *Prerequisites:* PSYC 2102 or an alternate research methods course approved by the instructor and PSYC 2712

SCIENCE**SCI1831 What On Earth Isn't Chemistry (Cross-Listed: CHEM 1831) 3 ch (3C)**

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. SCI 1831 cannot be used to satisfy requirements of any Faculty of Science, Applied Science and Engineering program.

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,

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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.

SCI1892 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 Mathematics.

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 (as a prerequisite or co-requisite) or 30 ch of any Faculty of Science, Applied Science and Engineering 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 (as a prerequisite or co-requisite) or 30 ch of any Faculty of Science, Applied Science and Engineering 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.

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.

SOCI1001 Introduction to Sociology 3 ch (3C/WEB) (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 sociology differentiates itself from other disciplines. Students will be 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 examined along with more recent contributors 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 Understanding Indigenous Experiences 3 ch (3C) (W)

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.

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.

SOCI2376 Sociology of Health, Illness and Healing (O) 3ch(3C/WEB) (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.

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. **NOTE:** Credit cannot be obtained for both SOCI 2501 and GEND 2001. *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 (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 minimum grade of C.

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 primarily at how photography and film are employed in fieldwork and in rapidly expanding 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 Perspectives on Cannabis Use in Canada 3 ch (3C) (W)

This course applies a number 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 opioid 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 1001 or equivalent with a grade of C or better; SOCI 2004 or SOCI 3008 with a C or better; one other SOCI course at the 1000 or 2000 level with a minimum grade of C.

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:* 9ch of lower-level Sociology including SOCI 1001, all with a grade of C or better; or enrolment in BSW

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 a minimum grade of C.

SOCI3214 Sociology of Communications: Canadian Culture Through Film 3 ch (3C) (W)

A sociological examination of the principal ways communications can be understood. The course examines how Canadian films have addressed

SECTION F: SAINT JOHN COURSES

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 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 to the Present Day 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, 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.

SOCI3325 The Sociology of Disability 3 ch (3C) (W)

This course will provide students with an in-depth understanding of the different theoretical and methodological approaches and key empirical findings within the field of disability studies, with a focus on sociological interventions. Here disability is used as an umbrella term to include physical disability, intellectual disability, deafness, blindness, mental health and addiction labels, neurodiversity and chronic illness, etc. Topics will include (but are not limited to) models of disability, ableism/saneism/audism, institutionalization, eugenics, settler-colonialism, education, income support, housing, representation, disability justice, and disability movements. The work of scholars with lived-experience will be prioritized. Students are encouraged to bring their own interests to the classroom. *Prerequisites:* SOCI 1001 or equivalent and two term-courses in lower level Sociology, 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 a minimum grade of C.

SOCI3615 Historical Genealogies of Care in the West 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.

SOCI4026 Social Policy in Canada 3 ch (3S) (W)

This course will provide students with the opportunity to interrogate Canadian social policy and to develop the skills to read and analyze primary policy documents as well as social policy scholarship. Through this course, students will learn to critically unpack Canada's patchwork quilt of social policies, to understand the implications for different communities and groups, and to identify possible social policy changes. Students will learn how to mobilize an intersectional approach when considering different social policies and how to read primary policy documents and write policy briefs. *Prerequisites:* 9ch of lower-level Sociology including SOCI 1001, all with a grade of C or better; or enrolment in BSW

SOCI4027 Independent Inquiry in Sociology 3 ch (3S) (W)

Students will work with a faculty advisor to design and complete a reading course or similar on an agreed upon topic in sociology. *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 (including 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.

SECTION F: SAINT JOHN COURSES

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. **NOTE:** Credit cannot be given for both SOCI 4505 and POLS 4505. *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.

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 Non-Science Majors 3 ch (3C/WEB)

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 with a minimum grade of C.

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 with a minimum grade of C.

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 with a minimum grade of C.

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 with a minimum grade of C (or MATH 1001 with a minimum grade of B+.) and one of STAT 1793, STAT 2263, STAT 2593, BA 1605, PSYC 2901 with a minimum grade of C; 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 with a minimum grade of C.

STAT4203 Introduction to Multivariate Data Analysis (A) 3 ch (3C)

Multivariate normal distribution; multivariate regression and the analysis of variance; canonical correlations; principal components; classification procedures; factor analysis; computer applications. Students should have some exposure to matrix algebra. *Prerequisite:* One of STAT 2793/BA 2606/PSYC 3913, MATH 1503 or MATH 2213 with a minimum grade of C (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 one of CS 1003, CS 1063, CS 1073/CMPE 1003 each with a minimum grade of C (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 with a minimum grade of C (or permission of the 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 each with a minimum grade of C. 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 with a minimum grade of C or permission of instructor.

STAT4993 Project in Statistics 3 ch (1S2R)

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:* A minimum of 90 ch and permission of the instructor.

UNIV**UNIV1003 Everything I Need to Know in First Year 3 ch (3C)**

This course, open only to first-year students, 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

This course 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 doing 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.

UNIV4501 Campus Leadership 3 ch (3C/S) EL

This course is designed to support campus leaders to enhance their knowledge of leadership theory and campus community; engage in inclusive and equitable leadership practice to support the UNB campuses and build reflective, critical thinking, problem solving, and lifelong learning skills. This course has limited enrolment. *Prerequisite:* 60ch completed or permission of the instructor.

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.

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BACHELOR OF ARTS

the Science disciplines and in one of the Arts disciplines and want to work in both.

FACULTY OF ARTS

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Associate Dean:	Carmen Poulin, BA, MA, PhD
Associate Dean:	Scott Ronis, BA, MA, PhD
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 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 business, civil service, counseling and mental health, education, journalism, law, library and information sciences, public policy).
- 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, research a topic, communicate orally and in writing, work independently or on a team, apply general principles to a specific problem, demonstrate flexibility, adapt to and grow in new situations, and 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 PROGRAMS AND COURSES AVAILABLE IN THE FACULTY OF ARTS						
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Anthropology	X	X	X		X	Anthropology
Applied Behaviour Analysis				X	X	Psychology
Biology	X*	X*	X		X	Biology
Chemistry	X*	X*	X		X	Chemistry
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
Computer Science					X	Computer Science
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
Economics Studies		X			X	Economics
English	X	X	X		X	English
Ethics			X	X	X	Philosophy
Family Violence Issues				X	X	Muriel McQueen Fergusson Centre
Film Production (MAAC)	X	X		X	X	Culture & Media Studies
Film Studies			X		X	Culture & Media Studies/English
French	X	X	X	X	X	French
Gender and Women's Studies	X**	X**	X		X	Arts
German					X	Culture & Media Studies
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	Arts
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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
Russian					X	Culture & Media Studies
Socio-Cultural Studies in Health	X	X	X			Sociology
Sociology	X	X	X		X	Sociology
Spanish					X	Culture & Media Studies
Statistics	X*	X*	X		X	Mathematics and 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

- 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. Arts Entrance Program

- High School students who do not meet the admission requirements noted in the Admission Chart for direct entry to the Bachelor of Arts degree programs may be considered for full-time admission to an Entrance Program to the extent that capacity allows.
- Students enrolled in the Arts Entrance Program are restricted to a maximum of 24 ch in the first year of studies. This is a prescribed set of courses as determined by the Faculty, including ARTS 1013, ARTS 1023, and ARTS 1003, and other breadth courses as determined in consultation with a student's academic advisor.
- Students are required to meet with their academic advisor on a regular basis.
- 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 ARTS 1013 and ARTS 1023 and meet other conditions as outlined by the Faculty, will be approved for admission to the BA program for the upcoming academic year.
- Students who do not succeed in completing the program requirements will generally not be permitted to continue in the Arts Entrance Program nor enter the BA degree program.
- Students can only register in the Arts Entrance Program once.

III. 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.

IV. Students should note the following additional regulations:

- 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.

- 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).
- 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.
- 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.
- 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.
- 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.
- 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:

- 6 ch - ARTS 1013 and ARTS 1023.
- 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.
- 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 1013, ARTS 1023, 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			Psychology*

*A student can receive credit for Psychology as a Social Science OR a Science but not both.

NOTES:

- Other languages such as Arabic, Wolastoqey, and Mi'kmaq (when available) may be taken to satisfy the requirements of Group A.
- 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 1013 was first taught in Fall 2022, and ARTS 1023 was first taught in Winter 2023. Students who previously took ARTS 1000, ARTS 1100, or ARTS 1001 and ARTS 1002 to meet their first-year BA requirements will still have those courses counted towards their program in lieu of ARTS 1013 and ARTS 1023. Students who completed ARTS 1000 or ARTS 1100 cannot receive credit for either ARTS 1001, ARTS 1002, ARTS 1013 or ARTS 1023. Students who completed ARTS 1001

cannot receive credit for ARTS 1013, and students who completed ARTS 1002 cannot receive credit for ARTS 1023.

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 enrolls 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
- Hrynck, 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.

CLASSICS AND ANCIENT HISTORY

DEPARTMENT OF CLASSICS AND ANCIENT HISTORY

General Office:	Tilley Hall, Room 120
Mailing Address:	Department of Classics and Ancient History University of New Brunswick P.O. Box 4400, Fredericton, New Brunswick, Canada E3B 5A3
Phone:	(506) 453-4621
Fax:	(506) 447-3072
Email:	classics@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/classics/index.html

Chair: Dr. Lisa Todd

FACULTY

- MacDonald, Carolyn, BA (King's/Dal), MA (Dal), PhD (Stanford), Assoc Prof - 2016
- Sears, Matthew A., BA (UNB), PhD (Cornell), 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, CLAS 1403, CLAS 1413, or CLAS 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 serve 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 60ch of university study with a CGPA of at least 2.5. Admission to the Honours programs normally requires the completion of at least 12ch of courses taught in the Department of Classics and Ancient History, including at least 6ch 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 2105/3105 and GRK 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 Classics and another discipline requires 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 requires 54 ch, distributed as follows:

- 6 ch of lower-level CLAS
- 6 ch LAT 1103/1113 OR GRK 1203/1213
- 42 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]) (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 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 LAT 1103/1113 and GRK 1203/1213
- 6 ch LAT 2105/3105 OR GRK 2205/3205
- 27 ch of 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:

1. 6 ch lower-level CLAS
2. 12 ch LAT 1103/1113 and GRK 1203/1213
3. 6 ch LAT 2105/3105 or GRK 2205/3205
4. 21 ch of 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 of 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 36ch, 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 course 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 in 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 in introductory Philosophy: PHIL 1101, PHIL 1301
- 6 ch of ancient language: GRK 1203/GRK 1213 or LAT 1103/LAT 1113 or any other 6 ch of Greek and/or Latin.
- 6 ch of advanced Philosophy (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	Ancient Literature and Knowledge	Archaeology of the Ancient World
3003 Greek History 3033 Roman History 3043 The Ancient Near East 3913 Gender and Power 3923 Ancient Law 3933 Golden Ages 3943 Ancient Spectacle 3953 Race and Racism 4063 Augustus	3403 Comic Theatre 3413 Tragic Theatre 3423 Gilgamesh 3433 Ancient World on Film 3503 Greek Gods and their Cults 3513 Trojan War 3523 Roman Myth and Religion 3703 Socrates 3723 Ancient Science 3733 Ancient Philosophies	3103 Archaeology and the Bible 3313 Field School 3333 Art and Archaeology of Greece 3343 Archaeologies of the Roman Empire 3353 Archaeology of Babylon 3373 Pompeii and Herculaneum 4603 Archaeology of Athens

SECTION G: FREDERICTON ACADEMIC PROGRAMS

	3885 Ancient Greek Literature 3886 Ancient Roman Literature	4613 Archaeology of Rome

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 enrolls 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 1* - An introduction to language skills which will enable students to gain a basic ability to speak read and write the language of modern Greece. [Prerequisite: none]
- **6 credit hours of classical archaeology and art history:** CLAS 3603: *The Art and Architecture of Greece 1* - A survey of outstanding examples of the art and architecture of Greece at important archeological sites and in major museums in Greece. [Prerequisite: 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. [Prerequisite: 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
- Major in Comparative Cultural Studies
- Minor in Comparative Cultural Studies

Honours programs are intended for students who are interested in a concentrated course of study.

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 3123, CCS 3666, CCS 3667, CCS 3794, CCS 3795, MUS/CCS 3798, CCS 3909, CCS 3064, CCS 3904
- 15 ch of upper-level additional CCS electives
- CCS 5000

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

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 18 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

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CRIMINOLOGY AND CRIMINAL JUSTICE**DEPARTMENT OF SOCIOLOGY**

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Email:	socio@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/sociology/index.html

FACULTY

Program Director: Dr. David Hofmann

1. Dafnos, Tia, BA (U of T), MA, PhD (York), Assoc Prof - 2015
2. Gill, Carmen, BA, MA, PhD (Qc), Prof - 2004
3. Hofmann, David, BA (Western), MSc (U de Montreal), PhD (Waterloo), Assoc Prof - 2016
4. Holtmann, Cathy, BA (Winnipeg), MDiv (St Michael's), MA (UNB), PhD (UNB), Assoc 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

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 6ch 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, SOCI2022, 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 other 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 2009	ANTH 3523	SOCI 2433
CRIM/SOCI 2563	ARTS 3000	SOCI 3115
CRIM/SOCI 2573	ARTS 3001	SOCI/POLS 3312
CRIM/SOCI 2575	ARTS 3002	UNBSJ PSYC 3265
CRIM/SOCI 2603	ARTS 4000	UNBSJ SOCI 2611
CRIM/SOCI 2613	FVI/SOCI 2003	UNBSJ SOCI 2805
CRIM/SOCI 2663	FVI/SOCI 3006	UNBSJ SOCI 3614
CRIM/SOCI 3383	GWS 1003	
CRIM/SOCI 3385	HIST 3374	
CRIM/SOCI 3623	HIST 4861	
CRIM/SOCI 3634	HIST 5605	
CRIM/SOCI 3636	PHIL 1201	
CRIM/SOCI 3662	PHIL 3331	
CRIM/SOCI 4513	POLS 3257	
CRIM/SOCI 4337	PSYC 3343	
CRIM/SOCI 4338		
CRIM/SOCI 4339		
CRIM/SOCI 4355		
CRIM/SOCI 4573		
CRIM/SOCI 4585		

SECTION G: FREDERICTON ACADEMIC PROGRAMS

(For further Arts Faculty regulations, please see the following link:
[//www.unb.ca/academics/calendar/undergraduate/current/frederictonprograms/bachelorofarts/index.html](http://www.unb.ca/academics/calendar/undergraduate/current/frederictonprograms/bachelorofarts/index.html))

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
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Email:	cams@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/cals/index.html
Chair:	Chantal Richard

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;

Media Arts and Cultures: Minor, Major, Honours;

Music: Minor

Film Studies: Minor (Interdepartmental Program)

The Department also offers language acquisition courses in Spanish, German, Japanese, Russian, and Chinese. For course listings consult Section H of this calendar or visit the Departmental website at [//www.unb.ca/fredericton/arts/departments/cals/index.html](http://www.unb.ca/fredericton/arts/departments/cals/index.html)

DRAMA

General Office:	Carleton Hall, Room 247
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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), 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 9ch or 12ch 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 6ch 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 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 3ch 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 9ch or 12ch 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 3ch 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, two 3ch courses which are the equivalent 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
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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
- 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, Weiqui, 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/pdf/s/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 ECON 3023, ECON 3013, 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. ADM 2623/ 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

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, ECON 3601/ADM 2623 and ECON 3628/ADM 3628 or approved substitutes, ECON 3665, ECON 4013, ECON 4023, ECON 4625, and ECON 4665.

Minor in Economics

To remain in the Honours programs, a student must maintain a GPA of 3.0 in Economics courses and approved substitutes

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 24ch of courses offered by the Department of Economics and the Department of Political Science. Students are required to complete 24ch as follows:

- 6ch of economics (ECON) courses chosen from: ECON 1014 or ECON 1013, ECON 1024 or ECON 1023, ECON 2203, ECON 3505, ECON 3705, ECON 3905.
- 6ch of introductory political science (POLS) courses chosen from: POLS 1103, POLS 1203, POLS 2013, POLS 2202, POLS 2503, POLS 2603.
- 6ch 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.
- 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 Business Administration 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 Honours and Majors in Economics and Majors in Economic Studies. It is co-ordinated through

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
Email:	english@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/english/
Chair:	Dr. Edith Snook

FACULTY

- Austin, Diana, BA (UNB), MA (Qu), DPhil (Oxon), Prof Emerita - 2017
- Ball, John C., BA, MA, PhD (Tor), Prof - 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 (Alberta), Prof - 1999
- Finlay, Tatrina, BA (Mt. Allison), MA (UNB), Teaching Prof - 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 1999
- 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) (Alberta), MA (C'dia), PhD (Tor), Prof (retired) - 2019
- 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
- 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 (Alberta), PhD (UWO), Prof & Chair - 2001

General Information

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 2901 and ENGL 2902.

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 2901 and 2902; 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 see 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 2901, and ENGL 2902. 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 36ch 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 in 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 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.

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 2901 and ENGL 2902 by the end of the second year and must have met this requirement by the end of the third year. The student must have achieved an 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 2901 and ENGL 2902
- 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 total 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 toward 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 2901 and ENGL 2902 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- and 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-Director 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- or 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
- 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- 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 / FILM 3455 / MAAC 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 3772 / FILM 3772 Film Directors
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

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Mailing Address:	Department of French University of New Brunswick P.O. Box 4400, Fredericton, NB Canada, E3B 5A3

Phone:	(506) 453-4651
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
- 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 to accommodate all types of students from true beginners to Francophones. It is therefore important 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, the Department of French recognizes that an undergraduate program in French studies must include aspects of literary, culture, and linguistic enquiry. Classes are normally taught in French.

The Department of French 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 language courses are offered in complementary pairs so that students can take French throughout a full academic year (two consecutive terms) and it is recommended that students do so whenever possible. The Department of French believes that taking a French course that is below a student's language proficiency is not a productive use of the student's time and that it constitutes academic dishonesty.

The following course combinations are recommended depending on the student's background:

- Students who have not previously studied French or have not completed Grade 12 (Core) French should take FR1014, followed by FR1015.
- Students who have completed basic Grade 12 (Core) French or equivalent should take FR1034, followed by FR1044.
- Students who have participated in a high school French immersion program or equivalent should take FR1184, followed by FR1194. In their second year, they should take two or more of the following courses: FR2124, FR2154, FR2164, FR2174 or FR2184.
- Students who were educated in French or have acquired equivalent fluency should enter directly at the second-year level and take two or more of the following courses: FR2124 FR2154, FR2164, FR2174, or FR2184.
- Students who have completed FR1044 and students whose background (some immersion, a period of time since their last French course, etc.) renders them too advanced for FR1034 but who are not at the level required for FR1184 may take FR2034, followed by FR2054.

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 UNB French Department. The student is responsible for providing a detailed description of the course and any other information the Department may require to assess it. Students should 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 toward the single major or honours programs and a maximum of 6 credit hours of transfer credits can be used toward a minor, double major, or joint honours.

Upper-Level Courses (first digits 3 or 4)

The Department offers upper-level courses in three areas: Language (second digit 0), Linguistics (second digit 2,3, or 4), and Literature (second digit 5, 6, or 8).

Linguistics

FR 3404 "Introduction to Linguistics" is a prerequisite or co-requisite for all Linguistics courses.

Literature

There are three kinds of literature courses: 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 lower-level and upper-level courses in French with a grade of C or better in each course.

Single Major: 36 credit hours of which at least 30 must be upper-level courses.

Double Major: 30 credit hours of which at least 24 must be upper-level 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 of which at least 36 must be upper-level courses.

Joint Honours: 30 credit hours of which at least 24 must be upper-level courses.

Honours students may choose between the courses-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. 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) 458-7511
Email:	unbgws@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/gws/index.html
Co-ordinator:	Dr. Carolyn MacDonald

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 Coordinator 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 Coordinator 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 36ch of course work in GWS, selected in consultation with the Coordinator of Gender and Women's Studies. These 36ch include:

- at least one of GWS 1003, Introduction to Gender and Women's Studies I, and GWS 2003, Introduction to Women's Studies II;
- GWS 4004, Seminar in Gender and Women's Studies;
- GWS 4900, Honours Thesis in Gender and Women's Studies; and
- 24ch 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 Coordinator 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 3326 Gender, Health, and Medicine
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 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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:	historicalstudies@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/history/
Chair:	Dr. Lisa Todd

- **FACULTY Brown, Cindy, BA, 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
- Cavanaugh, Stephanie, BA (UNB), MA, PhD (Toronto), Assistant Prof - 2023
- 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 (Toronto), Assistant Prof - 2016
- Kennedy, Sean, BA (Memorial), MA, PhD (York), Prof - 1999
- Mullally, Sasha, BA, MA (Ottawa), PhD (Toronto), Prof - 2009
- Todd, Lisa, BA (UNB), MA (London), PhD (Toronto), Associate Prof - 2013
- Tozer, Angela, BA (Toronto), MA, PhD (McGill), Assistant Prof - 2020
- Windsor, Lee, BA (Acadia), MA (WLU), PhD (UNB), Associate Prof - 200

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

These courses are recommended for first and second year students considering more advanced studies in History. The 2000-level includes our Foundation Courses. While these are recommended for anyone with an interest in the course material, at least 6 ch of Foundation Courses are required for students completing a History minor, major, double-major, or honours degree. The Foundation Courses are designed to build the skills of careful reading, critical analysis, research literacy, and effective communication necessary for serious historical inquiry. Students learn to analyze primary and secondary sources, to evaluate competing historiographical interpretations, and to research and write about historical problems. All Foundation Courses feature weekly small-group discussion sections

• 3000-level courses

These courses are suitable for both Arts and non-Arts students who have completed at least 60 ch, as well as for History students.

• 4000-level courses

These courses are suitable for Arts, non-Arts, and History students who have completed at least 60 ch overall and at least 6 ch in History. These advanced courses often include a tutorial component 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 through 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 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 3953 Ancient World, Modern Issues
CLAS 4063 Caesar Augustus

Economics

ECON 3017 Canadian Economics Development

Education

ED 5074 History and Philosophy of Education

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 18ch 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 Major, Double Major, 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 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:

- At least 6 ch must be in Foundation Courses (12 ch of Foundation Courses is recommended).
- No more than 18 ch at the 1000 or 2000 level, and at least 24 ch at the 3000 or 4000 level.
- 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 6ch must be in Foundation courses. At least 24ch of History courses must be completed at the 3000- and 4000-level. Pre-1800 course coverage is not required for a Double Major. 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) 453-4762
Email:	ids@unb.ca
Website:	https://www.unb.ca/fredericton/arts/departments/ids
Co-ordinator:	Dr. Daniel Tubb

FACULTY

- Koumari Mitra, Professor (Anthropology)
- Daniel Tubb, Associate Professor (Anthropology)
- Noah Pleshet, Assistant 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)
- Stefanie Hunt-Kennedy, Associate Professor (History)
- Suzanne Hindmarch, Associate Professor (Political Science)
- Thom Workman, Professor, (Political Science)
- 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 courses 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 ANTH 3704 ANTH 4502 ANTH 4702	Latin America South Asia Issues in Medical Anthropology Gender and Health

Comparative Cultural Studies	CCS 3455 CCS 3974 CCS 3904 CCS 4062	Latin America in Cinema Contemporary Spanish American Narrative Background of Latin American Cultures Spanish and Latin American Women Artists
Economics	ECON 3016 ECON 3705	Introduction to Development Economics Canada and the New Global Economy
English	ENGL 3813	Literatures of Africa, Caribbean and South Asia
History	HIST 3011 HIST 3012	Age of Empires Empires in Crisis
Political Science	POLS 3635 POLS 3643 POLS 3711 POLS 3713	The Critical Study of War The United Nations Political Economy of Development in Africa The Global Economy: Production, Profits, Power and People
Sociology	SOCI 3523 SOCI 3563 SOCI 3801 SOCI 4264	Sociology of International Development Global Perspectives in Environmental Health Food Studies in Sociological Context 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 the Program Coordinator, ids@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 International Development and Global Inequality (3 ch)
- IDS 2103 Institutions, Practices and Critics of 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 International Development and Global Inequality (3 ch)
- IDS 2103 Institutions, Practices, and Critics of 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 International Development and Global Inequality (3 ch)
- IDS 2103 Institutions, Practices, and Critics of International Development (3 ch)
- IDS 4103 Advanced Topics in International Development Studies (3 ch)
- IDS 4203 Development Project Design (3 ch)

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- 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 (IDS4900) 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 6ch 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 30ch, which must include LWSO 2003 and LWSO 4003. Students will choose an additional 24ch from the core and elective course lists. Of these, 9ch 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 24ch 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 36ch including completion of the requirements for a Double Major and

completion of either (a) 6ch 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 24ch, which must include LWSO 2003. Students will choose an additional 21ch from the core and elective course lists. Of these, 9ch shall be chosen from at least 2 disciplines (other than LWSO) among the core courses. At least 18ch 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)	ANTH 4244 Political and Legal Anthropology (3 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 3112 Drugs, Land, and Power (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 Indigenous Peoples of Turtle Island (3 ch)
	PSYC 3343 The Psychology of Crime (3 ch)	
	CRIM/SOCI 1603 Introduction to Criminology (3 ch)	ANTH 4244 Ethnopolitics and Identity (3 ch)
	CRIM/SOCI 3613 Theories and Perspectives in Criminology (3 ch)	CCS 3054 Crimes and Misdemeanors (3 ch)
	CRIM/SOCI 3636 Restorative Justice (3 ch)	CCS/SOCI 3666 Icons of Non-Violence I (3 ch)
	SOCI 4336 Families, Law and Social Policy (3 ch)	CCS/SOCI 3667 Icons of Non-Violence II (3 ch)
	CRIM/SOCI 4337 Legal Responses to Family Violence	CCS/SOCI 3668 Women, Creativity, and Nonviolence Across Cultures I (3 ch)
		CCS/SOCI 3669 Women, Creativity, and Nonviolence Across Cultures II (3 ch)
		COMS 3005 Intellectual Property and the Information

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		Commons (3 ch) (UNBSJ)
	CRIM/SOCI 4355 Sociology of Law (3 ch)	ECON 3905 Contemporary Issues in the Canadian Economy (3 ch)
	SOCI 4383 Colonialism, Racism, and Law (3 ch)	ECON 5835 Industrial Organization: Policy (3 ch)
		FVI/CRIM/SOCI 4338 Family Law and Family Violence (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 in Gender and Women's Studies (3 ch)
		HIST 3015 Racism in the West from Antiquity to the Enlightenment (3 ch)
		HIST 3144 Crime, Policing, and Punishment in Modern Europe (3 ch)
		HIST 3331 Canadian Capitalism (3 ch)
		HIST 3355 Nature, Culture and the Canadian Environment (3 ch)
		HIST 3374 Truth and 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 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 (3 ch)
		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: Past into Present (3 ch)
		HIST 5312 Native Peoples and Canadian and American State Policy, 1824-1982 (3 ch)
		HIST 5334 Policing in Canada, 1763- present (3 ch)
		PHIL 1101 Critical Thinking (3 ch)
		PHIL 1201 Ethics of Life and Death (3 ch)
		PHIL 3262 Applied Professional Ethics (3 ch)
		PHIL 3101 Introduction to Symbolic Logic (3 ch)
		PHIL 3205 Contemporary Ethical Theory (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 3217 Canadian

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		Environmental Policy (3 ch)
		POLS 3247 Trudeau's Canada (3 ch)
		POLS 3415 Liberalism (3 ch)
		POLS 3447 Gender, Race, and Global Politics (3 ch)
		POLS 3461 Politics and Policy Analysis (3 ch)
		POLS 3614 Ethics and International Politics (3 ch)
		POLS 3718 International Security in Theory and Practice (3 ch)
		POLS 4516 Contentious Politics (3 ch)
		POLS 4735 Theories of the Policy Process (3 ch)
		PSYC 3743 Drugs and Behaviour (3 ch) (UNBSJ: PSYC 2752) (UNBF: formerly PSYC 3023)
		CRIM/SOCI 2015 Introduction to the Canadian Criminal Justice System (3 ch)
		CRIM/SOCI 2563 Violence and Society (3 ch)
		CRIM/SOCI 2575 Terrorism (3 ch)
		SOCI 2603 Sociology of Deviance (3 ch) (UNBSJ: SOCI 2603)
		CRIM/SOCI 2613 Youth Justice (3 ch)
		CRIM/SOCI 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)
		CRIM/SOCI 3383 Punishment and Prisons (3 ch)
		CRIM/SOCI 3385 Sociology of Policing & Security (3 ch)
		SOCI 3605 International Human Rights (3 ch)

		CRIM/SOCI 3623 White Collar Crime (3 ch)
		CRIM/SOCI 3634 Violence Against Women (3 ch)
		SOCI 3635 Conflict Resolution (3 ch)
		CRIM/SOCI 3662 Understanding Genocide (3 ch)
		CRIM/SOCI 4301 Topics in Criminology & Socio-legal Studies (3 ch)
		CRIM/SOCI 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 at least 3 credit hours of 5000 level MAAC courses.

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

- CCS/MAAC 2021, MAAC/ FILM 2022, MAAC/FILM 2998, and MAAC/FILM 2999.
- An additional 6 ch of 1000-level and 2000-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 at least 3 credit hours of 5000 level MAAC courses.

Students considering this option should discuss their plans with the Media Arts & Cultures Program Advisor when they apply for admissions 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 3075 Framing Reality: Theory and Practice of Documentary Media

MAAC/MUS 3362 Sound Design

MAAC/FILM 3981 Screen Acting

MAAC/FILM 3998 Film Production

MAAC/FILM 3999 Editing and Post Production

MAAC 4401 Animation Principles

List B

FILM/ENGL 3903 Film Theory

FILM 3907 / ENGL 3907 Film Genre

FILM 3908 / ENGL 3908 Zombies in Film

FILM 3916 / ENGL 3916 Canadian Film since 1967

FILM 3917 / ENGL 3917 National Cinemas

FILM 3918 / 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

MAAC / FILM 3772 Film Directors

CCS 3455 The Cinema of Spain

CCS/ FILM / MAAC 3455 Latin American 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 42ch of MAAC courses, with a grade of C or better in each. The specific requirements are as follows:

Single Major Requirements

- 12 ch of 1000-level and 1000-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:

- CCS/MAAC 2021, MAAC/FILM 2022, MAAC/FILM 2998, and MAAC/FILM 2999
- An additional 6 ch of 1000-level and 2000-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)

FILM/ENGL 3186 Creative Writing: Feature Screenplay (this is a limited enrolment course)

MAAC/FILM 3075 Framing Reality: Theory and Practice of Documentary Media

MAAC/MUS 3362 Sound Design

MAAC/FILM 3981 Screen Acting

MAAC/FILM 3998 Film Production

MAAC 4401 Animation Principles

List B

FILM/ENGL 3903 Film Theory

FILM 3907 / ENGL 3907 Film Genre

FILM 3908 / ENGL 3908 Zombies in Film

FILM 3916 / ENGL 3916 Canadian Film since 1967

FILM 3917 / ENGL 3917 National Cinemas

FILM 3918 / 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

MAAC / FILM 3772 Film Directors

CCS 3455 The Cinema of Spain

CCS/ FILM / MAAC 3455 Latin American Cinema

CCS 3456 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 3021 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, MUS 3785, MUS 3795, or 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 3123 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.

- 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.
- A Minor in Ethics consists of two 1000- or 2000-level courses, an ethical theory course (e.g., PHIL 2201, PHIL 3205, PHIL 3264), and 15 credit hours selected from PHIL 1201, PHIL 1202, PHIL 2201, PHIL 3204, PHIL 3205, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3261, PHIL 3262, PHIL 3264, PHIL 3302, PHIL 3308, PHIL 3315, PHIL 3332, PHIL 3404. At least 12 ch overall must be taken at the upper division level.
- 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 24ch as follows:

- 6 ch of introductory philosophy chosen from PHIL 1101, PHIL 1201, PHIL 1301, PHIL 1302, PHIL 1401.
- 6 ch of ancient language: GRK 1203 / GRK 1213 or LAT 1103 / LAT 1113 or any other 6ch 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 consists 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 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 Philosophy 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 Single 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 credit hours in related courses in other departments may be counted as credit hours in Philosophy. Students must obtain an 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, or 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 3204 Business Ethics

PHIL 3208 Ecological Ethics

PHIL 2207 Ethics for Engineers Online Only

PHIL 3261 Military Ethics

PHIL 3209 Health Care Ethics in Canada

PHIL 3262 Applied Professional Ethics

PHIL 3205 Contemporary Ethical Theory

PHIL 3211 Cyber 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 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, or CLAS 3733. It will also accept for philosophy credit courses, KIN 3093, KIN 4093, POLS 3410, or 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, 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, totalling eighteen credit hours, which shall include the following:

- 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.
- 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
 ENVM 1002 Resource Management Issues, Ethics and Communications
 II ENVM 2021 Natural Resource Management, Institutions, Policy and Governance
 ENVM 2023 Climate Change
 FOR 2946 Bioethics, Emotional Intelligence, and the Nature of 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 3204 Business Ethics

PHIL 3205 Contemporary Ethical Theory

PHIL 3206 Environmental Ethics (only one of PHIL 2206, PHIL 3206, or 3208 for credit)

PHIL 3208 Ecological Ethics (cannot take both PHIL 2206 and PHIL 3208 for credit)

PHIL 3209 Health Care Ethics in Canada (cannot take both PHIL 2009 and PHIL 3209 for credit)

PHIL 3211 Cyber Ethics

PHIL 3261 Military Ethics

PHIL 3262 Applied Professional Ethics

PHIL 3264 Ethics

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 Simone 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 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:	//www.unb.ca/fredericton/arts/departments/politicalscience/
Chair:	Dr. Herb Emery

FACULTY

- Bigonnesse, Catherine, BA, MA (Sherbrooke), PhD (Simon Fraser), Asst Prof - 2022
- Emery, Herb, BA (hons) (Queen's), MA, PhD (UBC), Prof & Chair- 2016
- 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 (Queens), Prof - 2014
- McDonald, Ted, BA (St. Francis Xavier), MA, PhD (Melbourne), Prof - 2001
- Millar, Heather, BA (Simon Fraser), MPP (Simon Fraser), PhD (Toronto), Assoc Prof - 2019
- Workman, Thom W., BA(Car), MA, PhD (York), Prof - 1994
- Wright, Donald, BA (MtA), MA (McGill), PhD (Ottawa), Prof- 2005

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- Wright, Joanne, BSc (MtA), MA (UNB), PhD (York), Prof - 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.

With prior approval from the Director of Undergraduate Studies, students may count one of the following ARTS experiential learning courses towards the fulfilment of their program requirements in a Single Major, Double Major, Honours, or Joint Honours in Political Science: ARTS3000, ARTS3001, ARTS3002, and ARTS4000.

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 credits 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 chosen 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 chosen from: POLS 3103, 3213, 3215, 3217, 3241, 3251, 3257, 3323, 3392, 3461, 3531, 3647, 3845, 4724, 4725, 4727, 4734, 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 15ch from the list of required courses below:
 - 3 ch of Canadian Politics
 - POLS 2202 Canadian Politics (3 ch)
 - 3 ch of International Relations or Political Economy from the courses below:
 - POLS 2013 Introduction to Political Economy (3 ch)
 - POLS 2703 Introduction to International Relations (3 ch)
 - 3 ch of Comparative Politics from the courses below:
 - POLS 2303 Politics of the Developing World (3 ch)
 - POLS 2603 Comparative Politics of the Industrialized World (3 ch)
 - 3 ch of Theory from the courses below:
 - POLS 2403 Political Theory into the Present (3 ch)
 - POLS 3403 The Tradition of Political Theory (3 ch)
 - 3 ch of Methods from the courses below:
 - POLS 3534 Quantitative Approaches in Political Science (3 ch)
 - POLS 3535 Qualitative Methods in Political Science (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 upper-level courses. Students must include 9 ch from the list of required courses below:
 - 3 ch of Canadian Politics
 - POLS 2202 Canadian Politics (3 ch)
 - 3 ch of International Relations or Political Economy or Comparative Politics from the courses below:
 - POLS 2013 Introduction to Political Economy (3 ch)
 - POLS 2703 Introduction to International Relations (3 ch)
 - POLS 2303 Politics of the Developing World (3 ch)

- POLS 2603 Comparative Politics of the Industrialized World (3 ch)
- 3 ch of Theory from the courses below:
 - POLS 2403 Political Theory into the Present (3 ch)
 - POLS 3403 The Tradition of Political Theory (3 ch)

Honours Program

In order to be eligible for admission to the Honours program, students must usually have:

- a GPA of at least 3.0 in Political Science courses
- a cumulative GPA of 2.5 or higher
- at least 60 ch of course work completed
- 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 upper-level courses.

Honours students must include the following in their program:

- 3 ch of Canadian Politics
 - POLS 2202 Canadian Politics (3 ch)
- 3 ch of International Relations or Political Economy from the courses below:
 - POLS 2013 Introduction to Political Economy (3 ch)
 - POLS 2703 Introduction to International Relations (3 ch)
- 3 ch of Comparative Politics from the courses below:
 - POLS 2303 Politics of the Developing World (3 ch)
 - POLS 2603 Comparative Politics of the Industrialized World (3 ch)
- 3 ch of Theory from the courses below:
 - POLS 2403 Political Theory into the Present (3 ch)
 - POLS 3403 The Tradition of Political Theory (3 ch)
- 3 ch of Methods from the courses below:
 - POLS 3534 Quantitative Approaches in Political Science (3 ch)
 - POLS 3535 Qualitative Methods in Political Science (3 ch)
- POLS 4900 Honours Thesis
- 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:

- 3 ch of Canadian Politics
 - POLS 2202 Canadian Politics (3 ch)
- 3 ch of International Relations or Political Economy from the courses below:
 - POLS 2013 Introduction to Political Economy (3 ch)
 - POLS 2303 Politics of the Developing World (3 ch)
 - POLS 2603 Comparative Politics of the Industrialized World (3 ch)
- 3 ch of Theory from the courses below:
 - POLS 2403 Political Theory into the Present (3 ch)
 - POLS 3403 The Tradition of Political Theory (3 ch)
- 3 ch of Methods from the courses below:
 - POLS 3534 Quantitative Approaches in Political Science (3 ch)
 - POLS 3535 Qualitative Methods in Political Science (3 ch)
- 6 ch of Thesis from the courses below:
 - POLS 4900 Honours Thesis (6 ch)
 - 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.
- 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

POLS 1203	Political Issues in Canada and Beyond
POLS 1903	Introduction to Politics
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 3216	Pathways to Policies
POLS 3217	Canadian Environmental Policy
POLS 3237	Politics of Memory (O)
POLS 3241	Canadian Foreign Policy
POLS 3247	Trudeau's Canada
POLS 3251	Canadian Federalism
POLS 3257	Law and Politics in Canada
POLS 3323	Urban Politics and Policy
POLS 3647	Democratic Disengagement
POLS 4416	Canadian Political Thought
POLS 4516	Contentious Politics
POLS 4724	Topics in Environmental History and Politics
COMPARATIVE POLITICS	
POLS 1303	Pivotal Political Events
POLS 1451	The American Presidential Election in Historical Context (O)
POLS 1803	Politics of Climate Change
POLS 1903	Introduction to Politics
POLS 2013	Introduction to Political Economy
POLS 2101	American Politics
POLS 2303	Politics of the Developing World
POLS 2503	Women and Politics
POLS 2603	Comparative Politics of the Industrialized World
POLS 3103	Rights in Conflict in North America
POLS 3104	African American Politics (O)
POLS 3234	North American Integration
POLS 3312	Political Sociology (Cross-Listed: SOCI 3312)
POLS 3323	Urban Politics and Policy
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 4516	Contentious Politics
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 1903	Introduction to Politics
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 3234	North American Integration
POLS 3241	Canadian Foreign Policy
POLS 3447	Gender, Race & 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 3723	Global Political Economy

POLS 4495	Gender and War: Historical and Contemporary Perspectives (O)
POLS 4496	Thucydides: War and Empire
POLS 4704	Security and Insecurity in Global Politics
POLS 4727	Global Politics of Infectious Disease
POLITICAL ECONOMY	
POLS 1303	Pivotal Political Events
POLS 1703	Issues in World Politics
POLS 1803	Issues in World Politics
POLS 1903	Introduction to Politics
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 3723	Global Political 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 1903	Introduction to Politics
POLS 3103	Rights and Conflict in North America
POLS 3213	Capitalism, Canada, and Class
POLS 3215	Issues in Canadian Public Policy
POLS 3216	Pathways to Policies
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 4516	Contentious Politics
POLS 4724	Topics in Environmental History and Politics
POLS 4725	Climate and Energy Policy
POLS 4728	Economics & Politics of Health Care Reform
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 1903	Introduction to Politics
POLS 2403	Political Theory into the Present
POLS 2503	Women and Politics
POLS 3313	Political Psychology
POLS 3387	Theories of Comparative Politics
POLS 3403	The Tradition of Political Theory
POLS 3415	Liberalism (O)
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 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 3535	Qualitative Methods 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
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Website:	//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, PhD (Dal), Assoc Prof - 2016
- O'Sullivan, Lucia, BA, MA (UNB), PhD (Bowl), Prof - 2006
- Palmer, Michael, BSc, MSc, PhD (CMU), Inst - 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 (McG), PhD (McG), 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:

- General PSYC 1013, PSYC 1023, PSYC 3033, PSYC 3043, PSYC 3053, PSYC 3063, PSYC 3073, PSYC 3093, PSYC 4003, PSYC 4053;
- Research PSYC 2103, PSYC 2113, PSYC 3113, PSYC 3123, PSYC 3151, PSYC 3152, PSYC 4103, PSYC 4110, PSYC 4123;
- Developmental PSYC 2203, PSYC 3213, PSYC 3215, PSYC 3233, PSYC 3243, PSYC 3253, PSYC 3263, PSYC 3273, PSYC 4203, PSYC 4223;
- Clinical PSYC 2313, PSYC 3313, PSYC 3315, PSYC 3323, PSYC 3343, PSYC 3353, PSYC 3373, PSYC 3383, PSYC 4303;
- Personality and Social PSYC 2403, PSYC 3403, PSYC 3413, PSYC 3415, PSYC 3423, PSYC 3433, PSYC 3443, PSYC 3453, PSYC 4403;
- Learning PSYC 2515, PSYC 3515, PSYC 3525, PSYC 3535, PSYC 3545, PSYC 3555, PSYC 3565, PSYC 4515, PSYC 4525, PSYC 4535, PSYC 4565;¹
- Memory, Learning and Cognition PSYC 2603, PSYC 3613, PSYC 3623, PSYC 3633, PSYC 3643, PSYC 4603;
- 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 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.

- Only the following Area 5 courses may be counted toward the Honours, Major, or Minor in Psychology: PSYC 2515, PSYC 3515, PSYC 3565, and PSYC 4515. All other Area 5 courses are specific to the ABA Certificate Program but may be taken as electives toward the BA or 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 enroll 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 3ch (online)
PSYC 2313 Foundations of Clinical Psychology 3ch (online)
PSYC 2403 Foundations in Social Psychology 3ch (online)
PSYC 2603 Foundations of Memory and Cognition 3ch (online)
PSYC 2613/PSYC 2515 Foundations of Learning (online)
PSYC 2703 Foundations of Biological Psychology 3ch (online)
PSYC 3213 Language Development
PSYC 3663/PSYC 3515 Applied Behaviour Analysis (online)
PSYC 3673/PSYC 4515 Advanced ABA (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 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)
- seven advanced level Psychology courses 21ch (3xxx or 4xxx level) and
- History of Psychology 3ch (PSYC 4053)

Double Major:

A Double Major will consist of 42 ch in Psychology courses and will include the following:

- Introductory Psychology 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)
- five advanced level Psychology courses 15ch (3xxx or 4xxx level)
- History of Psychology 3ch (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 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12ch (selected from PSYC 2203, PSYC 2313, PSYC 2403, PSYC 2515, PSYC 2603, PSYC 2613, and PSYC 2703)

- seven advanced level Psychology courses 21ch (3xxx or 4xxx level)
 - Students must take one of PSYC 3151, PSYC 3152, PSYC 3113 or PSYC 4123 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 of PSYC 3151, PSYC 3152, PSYC 3113, or PSYC 4123 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, 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.

Joint Honours:

A Joint Honours will consist of 48 ch in Psychology courses and will include the following:

- Introductory Psychology 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- four Foundation courses 12ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603, PSYC 2613, and PSYC 2703)
- four advanced level Psychology courses 12ch (3xxx or 4xxx level).
 - Students must take one of PSYC 3151, PSYC 3152, PSYC 3113, or PSYC 4123 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 3ch (PSYC 3113)
- full year Honours Thesis 6ch (PSYC 4110), and
- History of Psychology 3ch (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 48ch in Psychology and 24ch in Biology. The Psychology courses will include the following:

- Introductory Psychology 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- Foundations of Biological Psychology 3ch (PSYC 2703)
- three Foundation courses 9ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603, and PSYC 2613)
- three advanced level Area 7 courses 9ch (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 12ch (3xxx or 4xxx level), and
- History of Psychology 3ch (PSYC 4053)

The Biology courses will consist of the following: Introductory Biology 6ch (BIOL 1001 or BIOL 1551 and BIOL 1012 or BIOL 1552) and a minimum of any six additional courses in Biology 18ch.

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 6ch (PSYC 1013 and PSYC 1023)
- Research Methods 6ch (PSYC 2103/PSYC 2123 and PSYC 2113)
- Foundations of Biological Psychology 3ch (PSYC 2703)
- three Foundation courses 9ch (selected from PSYC 2203, PSYC 2313, PSYC 2515, PSYC 2403, PSYC 2603 and PSYC 2613)
- three advanced level Area 7 courses 9ch (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 12ch (3xxx or 4xxx level)
 - Students must take one of PSYC 3151, PSYC 3152, PSYC 3113, or PSYC 4123 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 3ch (PSYC 3113)
- full year Honours Thesis 6ch (PSYC 4110), and
- History of Psychology 3ch (PSYC 4053)

The Biology courses will consist of the following: Introductory Biology 6ch (BIOL 1001 or BIOL 1551 and BIOL 1012 or BIOL 1552) and a minimum of any six additional courses in Biology 18ch. 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 Applied 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 program, 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 a B average in all coursework.

To apply for the ABA program, applicants must submit:

- a resume that outlines their academic experiences and any relevant work/volunteer experience,
- a statement of interest outlining experiences and interests related to the Certificate in ABA program,
- official transcripts of all previous coursework
- 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
- 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 of the above courses are offered 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 fulfil requirements of the Major in Psychology. All other courses, including the practicum courses, cannot be used to fulfil 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
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Phone:	(506) 453-4849
Email:	socio@unb.ca
Website:	http://www.unb.ca/fredericton/arts/departments/sociology/index.html
Chair:	Dr. Cathy Holtmann

FACULTY

- Bombak, Andrea, BSc (Calg), MA, PhD (Manitoba), Asst Prof - 2017
- Bowden, Gary, BA (W. Wash), MA, PhD (Calg), Assoc Prof - 1990, retired
- 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
- 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
- Kalman-Lamb, Nathan, BA (U of T), MA, PhD (York), Asst Prof - 2022
- Low, Jacqueline, BA, MA (Conc.), PhD (McM), Prof - 2001
- 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
- Orr, Celeste, BA, MA (McM), MA (Carl), PhD (Ott), Asst Prof - 2023
- Reddick, Andy, BA (Qu, Car), MA, PhD (Carl), Adjunct - 2012
- Rehorick, David A., BA, MA, PhD (Alta), Prof Emeritus - 1974
- Thériault, Luc, BA (Qc), M.Sc (Montr), PhD (U of T), Prof - 2005
- Tramonte, Lucia, BA, MA, PhD (UNIMI), Prof - 2009
- van den Hoonard, Will C., BA (UNB), MA (Mem), PhD (Manc), Prof Emeritus - 1979

General Information

Sociology is the study of social processes such as urbanization, or socialization and social institutions including the family or education. The Sociology Department curriculum is divided into different levels that students should be aware of when choosing courses in which to enroll. 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 Director of Undergraduate Studies in Sociology 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,

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.

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 24ch 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 in 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 Director of Undergraduate Studies in Sociology 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 Director of Undergraduate Studies in Sociology 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 Major in Sociology or a Double Major in Sociology and another Arts discipline.

Honours

Students intending to take Single Honours in Sociology or Joint Honours in Sociology and another Arts discipline are usually expected to have completed at least 12 ch of Sociology courses, have a 3.3 GPA or better in Sociology 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 Director of Undergraduate Studies in Sociology.

- 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 Joint Honours in Sociology and another Arts discipline: SOCI 2022, SOCI 3004, SOCI 3014, and SOCI 4004, in addition to either SOCI 4011 or SOCI 4022.

There is an option in the Single Honours program that a student may research and write an Honours Thesis (SOCI 5000). The project should produce a 40-60 page manuscript and must be approved by the Sociology Department.

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 across all other courses. 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 all other 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:

[/www.unb.ca/academics/calendar/undergraduate/current/frederictonprograms/bachelorofarts/index.html](https://www.unb.ca/academics/calendar/undergraduate/current/frederictonprograms/bachelorofarts/index.html))

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, Criminology and Criminal Justice, Economics, Economics Studies, English, French, History, Media Arts and Cultures, Philosophy, Political Science, Psychology, Socio-Cultural Studies in Health, 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 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 1013 and ARTS 1023. Note that students who have successfully completed ARTS 1000, ARTS 1100, ARTS 1001, OR ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or MATH 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 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 pre-requisites for upper-level courses and take account of courses offered in alternating years and other program requirements.

CONCURRENT DEGREE 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, Criminology and Criminal Justice, Economics, Economics Studies, English, French, History, Media Arts and Cultures, Philosophy, Political Science, Psychology, Socio-Cultural Studies in Health, 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 1013 and ARTS 1023 (6 ch). Note that students who have successfully completed ARTS 1000, ARTS 1100, OR ARTS 1001 and ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
2. MATH 1003 and MATH 1013 (or enriched MATH 1053 and MATH 1063)
3. CS 1073, CS 1083, and CS 1203
4. One of CS 1103 or CS 1303
5. 6 ch in one Humanities discipline, OR one Language, OR one Social Science

Second Year

1. CS 2043, CS 2253, CS 2263, CS 2383
2. CS 1103 or CS 1303 (whichever one was not taken in First Year)
3. One required MATH or STAT course.
4. 12 ch of Arts courses toward completing the first- and second-year diversity requirements

In the third, fourth, and fifth years of the Arts side of the program, students will complete the requirements for their single major in an Arts subject, including at least 24 ch at the upper level.

The third, fourth, and fifth years on the Computer Science side are distributed as follows:

Third Year

1. CS 2333, CS 3413, CS 3853, CS 3997
2. One required MATH or STAT course

Fourth Year

1. CS 3383, CS 3873

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- Two CS/SWE technical electives
- An approved upper-year MATH or STAT course

Fifth Year

- Four CS/SWE technical electives at the 3000 level or above (with at least one of these at the 4000 level or above)

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 enroll 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, 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 CS 1303. 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 Ethicist, 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:

- 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.
- 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).
- 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
ENVM 1001 Resource Management Issues, Ethics and Communications I
ENVM 1002 Resource Management Issues, Ethics and Communications II
ENVM 2021 Natural Resource Management, Institutions, Policy and Government
ENVM 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 Perspectives
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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 (Choose up to 3 courses)	Supplementary Courses 30% relevant content (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 2003/SOCI 2003 Interpersonal Cyberviolence	CCS/SOCI 3666 Icons of Nonviolence I	ANTH 3523 Forensic Anthropology
FVI 2009/SOCI 2009/CRIM 2009 Human Trafficking	CCS/SOCI 3667 Icons of Nonviolence II	ANTH 4204 Gender, Kinship and Marriage
FVI 3006/SOCI 3006 Intervention Strategies and Programs for People who Batter	CCS/SOCI 3668 Women, Creativity and Nonviolence Across Cultures I	ANTH 4502 Issues in Medical Anthropology
FVI 3007/SOCI 3007 Religion and Family Violence	CCS/SOCI 3669 Women, Creativity and Nonviolence Across Cultures II	ANTH 4702 Gender and Health
FVI 3634/SOCI 3634 Violence Against Women	GWS 1003 Introduction to Gender and Women's Studies I	CCS 3062 Love and Religion: Latin America and Caribbean Women's Narrative from Golden Age to the Beginning of the 20 th Century
FVI 4002 Multidisciplinary Approaches to Family Violence	GWS 2003 Introduction to Gender and Women's Studies II	CCS 4062 Span & Lat Amer Women Artists
SOCI 4337 Legal Responses to Family Violence	GWS 4004 Seminar in Gender and Women's Studies	CLAS 3913 Gender and Power in Ancient Greece and Rome
	GWS 4900 Honours Thesis in Gender and Women's Studies	CLAS 4333 Living in the Ancient World: Greek and Roman Housing
	PSYC 3253 Family Process	ENGL 3883 Women's Writing in English
	SOCI 2563 Violence and Society	ENGL 3813 Literatures of Africa, the Caribbean, and South Asia
	SOCI 2303 Sociology of Families	FR 3534 Women's Writing FR 3554 Écrits de femmes
	SOCI 4336 Familles, Law, and Social Policy	FR 3536 A History of Women's Writing in FR 3536 Histoire de la littérature des femmes en France
		ENGL 3583 The Women Novelists of Britain (1900 to Today)
		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 20 th Century Europe
		HIST 5605 Freedom on Trial: Slavery, Violence, and the Law
		HIST 5103 Gender, Race, and Disease in Early Modern Atlantic 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 3403 Social Interaction
		SOCI 3543 Sociology of Gender Relations
		SOCI 3605 International Human Rights
		SOCI 4513 Inequality and Social Justice
		SOCI 2014 Racism

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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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
- Morton, Erin, BA (Mt. Allison), MA, PhD (Queen's), Prof - 2009, History
- Mullally, Sasha, BA, MA (Ottawa), PhD (Tor), Prof - 2009 - History
- Sinclair, Sue, BA (Mt. Allison), MA (UNB), MA, PhD (Tor), Assoc 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)

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)

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.

Program of Study

First Year

1. ARTS 1013 and ARTS 1023 (6 ch). Note that students who have successfully completed ARTS 1000, ARTS 1100 OR ARTS 1001 and ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
2. 6 term lecture courses in first-year Science (MATH 1003 or MATH 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

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.

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 pre-requisites 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.

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:

- ARTS 1013 and ARTS 1023. Note that students who have successfully completed ARTS 1000, ARTS 1100, ARTS 1001 OR ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
- 6 ch in each of three different distribution groups, chosen from the four groups of disciplines (A, B, C, D) listed below (18 ch). Students are encouraged to explore different subjects; within any distribution group they may take either 6 ch in the same subject or 3 ch in each of two subjects.
- 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) ²	B (Humanities)	C (Social Sciences)	D (Sciences)
Chinese (CHNS)	Classics (CLAS)	Anthropology (ANTH)	Astronomy (ASTR)

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

French (FR)	English (ENGL)	Economics (ECON)	Biology (BIOL)
German (GER)	Drama (DRAM)	Gender and Women's Studies (GWS)	Chemistry (CHEM)
Greek (Ancient) (GRK)	History (HIST)	International Development Studies (IDS)	Computer Science (CS)
Greek (Modern) (GRK)	Media Arts & Cultures (MAAC)	Political Science (POLS)	Earth Sciences (ESCI)
Japanese (JPNS)	Music (MUS)	Psychology (PSYC) 3	Mathematics (MATH)
Latin (LAT)	Philosophy (PHIL)	Sociology (SOCL)	Physics (PHYS)
Spanish (SPAN)	Comparative Cultural Studies (CCS)		Statistics (STAT)
			Psychology (PSYC)3

NOTES:

- ARTS 1000, ARTS 1100, or ARTS 1001 and ARTS 1002 meets this requirement.
- Other languages such as Russian, Arabic, Wolastoqey, and Mi'kmaq (when available) may be taken to satisfy the requirements of Group A.
- Students can receive credit for Psychology as a Social Science OR a Science, but not both.
- 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 information on the program at NBCCD please see NBCCD Programs Overview (<https://www.nbccd.ca/programs/bachelor-applied-arts>).

- 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, Johnathan, BComm (McGill), MFin (Qu.), PhD (HEC Montreal), CPA, CA, Asst Prof - 2018
- 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.), MSc (Wat.), PhD (Tor), Prof - 2001

- Foord, David J. A., BA (Regina), LLB (Dal), PhD (UNB), Asst Prof - 2020
- Frooman, Jeffrey, BS, BA (Ill-Urbana), MBA (Mich), MA, PhD (Pitts), Prof (Cross-Appt, Arts) - 2007
- Gajurel, Dinesh, LLB, MBS, MA (Tribhuvan), MPhil (Tribhuvan-Nepal), PhD (Tasmania), Asst Prof - 2017
- Grant, E. Stephen, BBA (UNB), MBA (Maine-Orono), PhD (Memphis), Prof - 1993
- Haley, Lynn M., BSc, MBA (UNB), Sr. Teaching Assoc - 2005
- Lan, Chunhua, DSc (Washington Univ. in St. Louis), PhD (Boston College), Asst Prof - 2018
- Leonard, R. Glenn, BBA, MA, PhD (UNB), CPA, CA, Assoc Prof - 2006
- Li, Wan, BEng Mgmt, MMgmt (Xi'an Jiaotong Univ. China), PhD (York), Asst Prof - 2019
- Lin, Hsin-Chen, BS, MS (National Taipei U.), PhD (Purdue), Assoc Prof - 2014
- Lynch, Eamonn, BComm (Victoria), MSc (Leth), MBA (McG), DipUT (UNB), Sr Teaching Assoc - 2005
- McNally, Jeffery J., BA (Mt. A), MA (UWO), PhD (McM.), Assoc Prof - 2010
- Mitra, Devashis, BA (Delhi), PhD (Mass-Amherst), CA, FCA, Prof and Dean - 1991
- Musaji, Serghei, B.Bnkg & Fin., MIB (Romania), MRM (Spain), PhD (Spain) - Asst Prof - 2020
- Nicholls, Shane, BBA, 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), PhD (Rensselaer Polytechnic Inst.), Asst Prof - 2015
- Shamsi, Azam, BSc (Tehran), MSc (Sharif Univ. of Tech.), PhD (McM), 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 (Tehran), MSc (Sharif Univ Tech.), PhD (McM), Asst Prof - 2019
- Tucker, Suzanne, BBA, MBA (UNB), CPA, CMA, FCP, FCMA, Sr 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 Management. 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.

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

1. A student's scholastic record normally must satisfy the general admission requirements of the Faculty of Management specified in Section B.1.
2. 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.
3. A student normally will not be allowed to transfer into the Faculty mid-way through the academic year.
4. Application is by special form available from the Registrar's Office and must be submitted to the Registrar's Office by 31 March.
5. 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 G.P.A. 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 G.P.A., 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.
- ii. 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.
- iii. 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.
- iv. Students may select a Joint Honours in Finance and Economics by selecting appropriate optional courses. See Section 12.
- v. 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 can 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 Management. 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 indicated on their final transcript.
2. Approval of courses: Students are expected to consult with the academic advisors of the Faculty of Management 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 enroll for a maximum of 36 ch in any year of the program (excluding summer registrations) 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) 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: STAT 2043, STAT 2253, STAT 2263, STAT 2264, STAT 2283, STAT 2293, STAT 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 Management, 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 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 Section F 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)
- ADM1213 (second term)
- ADM 1313 (second term)
- ADM 1192 (first 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 2815 (first term)
- ADM 2713 (second term)
- Elective (second term; see Note 2)
- Elective (second term; see Note 2)
- Elective (second term; see Note 2)

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

ADM 4191

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 mentioned 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 Management 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 4326, 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.

- 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.
- Students must register for each work term in order that they be considered full-time students while working.
- A work term fee will be charged for each 4-month work term registered.
- 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.
- 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.
- Students will normally have at least one study term after their last work term.
- Each successful work term will be noted on the student's transcript.
- 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 Management. 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, 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 Management. 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:

- achieve a cumulative grade point average of at least 2.0 over the 36 credit hours required, and
- 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:

- achieve a cumulative grade point average of at least 2.0 over the 66 credit hours required, and
- 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:

- achieve a cumulative grade point average of at least 2.0 over the 36 credit hours required, and
- 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:

- achieve a cumulative grade point average of at least 2.0 over the 66 credit hours required, and
- 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

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		Ch
	Nine credit hours chosen from Anthropology, Political Science, Psychology or Sociology	9
	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.

- 30 credit hours completed at a recognized post-secondary institution with a minimum cumulative grade point average of 2.7
Or
Or
- 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.

BACHELOR OF COMPUTER SCIENCE

FACULTY OF COMPUTER SCIENCE

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FACULTY

Dean: Luigi Benedicenti, PhD, PEng, SMIEEE, 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), Associate Teaching Professor - 2016
- Bremner, David, BSc (Calg), MSc (S.Fraser), PhD (McG.), Prof (Cross Appt - Mathematics and Statistics) - 1999
- Cao, Hung, BEng in Computer Engineering (Vietnam), MSc (Ireland), PhD (UNB), Asst Prof - 2022
- 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
- Hakak, Saqib, BE (India), MS (Malaysia), PhD (Malaysia), Asst Prof - 2022
- 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) - B.Sc India, M.Sc India, M.Tech. CS India, PhD Waterloo, Asst Prof - 2020
- McAllister, Andrew, BA, MSc (CS) (UNB), PhD (Sask), Prof - 1994
- Palma, Francis, BSc (Bangladesh), MSc (Italy), PhD (Montreal), Asst Prof - 2022
- Pochech, Przemyslaw, BEng (Warsaw), MSc (CS), PhD (UNB), Assoc Prof - 1989
- Ray, Suprio, BE (NIT), MSc (UBC), PhD (Tor), Assoc Prof - 2015
- Razavi-Far, Roozbeh, MSc (Tehran), PhD (Tehran), PhD (Milan), Asst Prof - 2022

Requirements:

A Certificate in Applied Human Resources Management will be awarded to individuals who:

- achieve a cumulative grade point average of at least 2.0 over the 30 credit hours required, and
- 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	9
Total Credit Hours		30

- Rea, Daniel, BCS, MCS, PhD 2019 University of Manitoba, Asst Prof - 2020
- Song, Wei, BSc (HBU), MSc (BUPT), PhD (Wat), Assoc Prof - 2009
- Webber, Natalie, BCS, MCS (UNB), Teaching Professor - 2000
- Wightman, Richard, BScF, MScF (UNB), Teaching Professor - 2000
- Wilson, Connor, BCS, MCS (UNB), Assistant Teaching Professor - 2022
- Zhang, Huajie, BSc (China), MSc (China), PhD (WOnt), Prof - 2002

Adjunct Professors*

- Alhadi, 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
- Lashkari, Arash Habibi, PhD, Adjunct Prof - 2022
- Mamun, Mohammad, Adjunct Prof - 2020
- Munro, Ian, BA (UNB), MSc (Br Col), PhD (Tor), Adjunct Prof - 2005
- Patros, Panos, PhD, Adjunct Prof - 2019
- Spencer, Bruce, BSc (Dal), MMath, PhD (Wat), Adjunct Prof. - 1990

* 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 program:

- Bachelor of Science in Software Engineering (offered jointly with the Faculty of Engineering)

Co-Operative Education Program

- 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 reenter, 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 Introduction to Software Engineering
 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 courses listed above, students are required to select a total of 7 approved technical elective courses totalling 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 a specialization in cybersecurity with the BCS degree (see below), to complete a Minor in another area, to work towards a Diploma in Technology Management and Entrepreneurship, 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, 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 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 Cybersecurity

Emphasizes the protection of information assets from cybersecurity threats. The requirements for the Specialization in Cybersecurity are to complete the following courses, each with a grade of C or better:

- CS 2413, CS 4355, CS 4411, CS 4417, CS 4865, (one of CS 4413, CS 4415, or CS 4419).

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 years.

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 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 enroll 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 with an opportunity to acquire the formal background necessary to become effective participants in the Information Technology industry. This program cannot be taken concurrently if you are in another 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 Introduction to Software Engineering

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

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) 458-7157
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), EDS (NSU), PhD (Queen's), Assoc Dean (Undergraduate Programs) - 2002
- Benjamin, Amanda, BA (York), MA (Concordia), PhD (UBC), Assoc Prof - 2009
- Blatherwick, Mary, BA (Ed), BFA (NSCAD), MA (UBC), PhD (Roehampton), Prof - 2000
- Brien, Ken, BA (UWO), BEd (UWO), MEd (UNB), LL.M. (York), EdD (Alberta), Assoc Prof - 2005
- Burkholder, Casey, BA (Manitoba), BEd (Acadia), MA (Concordia), PhD (McGill), Assoc Prof. - 2017
- Culligan, Karla, BA (MtA), BEd, MEd, PhD (UNB), Asst Prof - 2021
- Garner, Andrea, PGDE (Scotland), MEd (Birmingham), PhD (Australia), Asst Prof - 2022
- Garrett, Melissa, BA, BEd, MEd, PhD (UNB), Asst Prof - 2022
- Hamm, Lyle, BA (Brandon U), BEd (Alberta), MEd (Lethbridge), PhD (Calgary), Assoc Prof - 2013

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.

- Hirschhorn, Mark, BSc (U. Sask), BEd (Lethbridge), MEd, PhD (Alberta), Prof - 2008
- Kress, Margaret, BRS (Manitoba), BEd, MEd (Saskatchewan), PhD (Manitoba), Adjunct Prof - 2015
- Kristmanson, Paula Lee, (UNB), CFLS (Laval), MEd, PhD (UNB), Prof - 2006
- Landine, Jeff, BA (UNB), BEd (STU), MEd (UNB), PhD (OISE/U of T), Assoc Prof - 2010
- Le Bouthillier, Josée, BA (Ottawa), BEd, MA, PhD (UNB), Research Assoc - 2015
- Malins, Pamela, BA (Laurier - Brantford), BEd (Nipissing) MEd (Western), PhD (Western), Adjunct 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
- Randall, Lynn, BPE (Brock), BEd, MEd (UNB), PhD (Ohio State), Prof - 2000
- Rodriguez, Juan, Reg Elementary Teacher (Ministry of Colombia), B Psy (Colombia), MA (Guelph), PhD Pys (Commonwealth), PhD Ed (Toronto), Asst Prof - 2020
- Rogers, Matthew, BA, BEd, MEd, PhD (UNB), Assoc Prof - 2016
- Rose, Sherry, BEd, MEd, PhD (UNB), Assoc Prof - 2013
- Rowett, Jen, BScKin, MEd, PhD (UNB), Asst Teach Prof - 2021
- Saul, Roger, BA (McGill), BEd, MEd, PhD (York), Prof - 2014
- Sears, Alan, BEd, MEd (UNB), PhD (UBC), Professor Emeritus - 1988
- Sloat, Elizabeth, BEd (UNB), MEd, PhD (McGill), Prof - 1999
- Smith-Ellis, Shari, BEd, MEd (UNB), Asst Teaching Prof - 2021
- Stewart, Kim, BEd, MEd, PhD (UNB), Asst Prof - 2020

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- Tozer, Angela, BA (UofT), MA, PhD (McGill), Asst Teaching Prof - 2021
- Wagner, David, BRS (Mennonite Brethren), BA (Winnipeg), BEd, MEd, PhD (Alta), Prof & Assoc Dean (Graduate Programs) - 2004
- Wahl, Sharon, BA (SFU), Prof. Teacher's Cert. (UBC), MEd (SFU), PhD (SFU), Dean - 2018
- White, Melissa, BOA (Mt. St. Vin), MA, PhD (OISE), Assoc Prof - 2011
- Whitty, Pam A.M., BA (McMaster), BEd, MEd (UNB), EdD (Maine), Professor Emeritus - 1991
- Winslow, Katherine M., BSc (St. F.X.), MS (N Dakota State), PhD (Minn.), Assoc Prof - 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 (10 months)
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 programs will be accepted into one of the following:

- Program Option 1: Early Years/Elementary (K-5)
- Program Option 2: Secondary (6-12)

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.

10-Month School Years BEd Program

Graduates of the School Years 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 Government of New Brunswick.

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.

School Years Program: Early Years/Elementary

Applicants must have completed a 4-year 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.** Applicants 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. Social Studies
5. Languages
6. Art
7. Physical Education
8. Health
9. Music

NOTE: Students entering this stream will be placed in an elementary school for their practicum. 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
4. Interview for select applicants meeting minimum admission requirements

School Years Program: Secondary

Applicants 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.** Applicants 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, Canadian Studies, Chemistry, Classics, Drama, Economics, English, Environmental Science, French, Geography, Graphic Arts and Design, Health, History, Indigenous Studies, 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
4. Interview for select applicants meeting minimum admission requirements

(FEAA) Faculty of Education Admission Advantage

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.

1. After secondary school graduation providing they achieve a minimum admission average to an undergraduate degree program at UNB (Fredericton) of 80% and meet the teachable subject admission requirements for education within their first degree at UNB (Fredericton) and meet the 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 the progress criteria.

Secondary school students should complete these steps:

1. Apply to an undergraduate program at UNB (Fredericton), 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 and submit the components of Faculty of Education Admission Advantage supplementary application to the Admissions Office by June 30th prior to the start of their UNBF degree program.

First year UNB (Fredericton) students should complete and submit the initial component of the Faculty of Education Admission Advantage supplementary application to the Admissions Office by June 30th between the first and second year of their UNBF degree program

(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 components of Faculty of Education Admission Advantage supplementary application, including interview.

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 with 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

- 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.

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)

- a. 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.
- b. Practicum placements are evaluated on a pass/fail basis. If a pre-service teacher is removed from their 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.

- c. 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.
- d. Students are responsible for all travel and living expenses incurred during the practicum. Students wishing to be placed in a French Immersion classroom for 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 year 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 the Grades)
- g. Students who do not complete the practicum for reasons other than receiving 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 the regulation.

Residency Requirement

Students in the BEd degree program must normally complete a minimum of 60ch in Education, including Field Studies, from the University of New Brunswick.

Time Limit

School Years 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 Programs

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 School Years 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.

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 methodology, and the design of curriculum. The School Years pattern has the following components.

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 5070 Cultural Contexts of Education
ED 5175 Classroom Assessment

OR

ED 5561 Évaluation et Apprentissage

Plus, one 3 ch course in Indigenous Education

Practicum: ED 5050 The school-based experience component of the B.Ed. involves an observation practicum during K-12 students' first week of classes in September, a seven week Intermediate Practicum in the fall term, and an eight week Advanced Practicum during the winter term.

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.

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. 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
- International Education
- Literacy Education
- Mathematics Education
- Physical Education and Health
- Second Language Education (ESL)
- Second Language Education (FSL)
- Science Education
- Social Studies Education (including geography)

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 2 teachable concentrations based on course work from their previous undergraduate degree. Each concentration must consist of 9 ch in the areas chosen (those in the Physical Education and Health concentration must complete 12 ch in that area).

Concentration Areas for Program Option 2

- Arts Education (Visual Arts)
- Indigenous Education
- International Education

- Literacy Education
- Mathematics Education
- Physical Education and Health
- Second Language Education (ESL)
- Second Language Education (FSL)
- Science Education
- Social Studies Education (history & classics and/or geography)

Concentration course requirements for Program Option 2

Arts Education (choose 9 ch)

Visual Education: ED 5209, ED 5154, ED 5213

Music: ED 5243, ED 5241 and ED 5242

Drama: ED 5314; ED 5315

Indigenous Education

Choose courses in consultation with Mi'kmaq-Wolastoqey Centre.

International Education

ED 5071, ED 5801 and ED 5802

Literacy Education

ED 5353, ED 5354, plus, one other approved literacy education course.

Mathematics Education

ED 5422 plus, two other mathematics education courses

Physical Education and Health

Physical Education: ED 5488, ED 5492, and ED 5493

Health Education: ED 3063, ED 4451

Choose all three Phys. Ed. courses and one health education course.

Second Language Education (ESL)

ED 5564, ED 5565, ED 5566, ED 5575. For CTESL certificate, consult the Faculty.

Second Language Education (FSL)

ED 5561, ED 5562, ED 5563, ED 5568, ED 5569 or ED 5575. For FSL 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

Pedagogical Studies Courses and Electives

NOTE: Students pursuing the School Years program may take no more than one adult education course.

Adult Education

ADED 3113 Communication Practices for Adult Education

ADED 3115 Methods & strategies in Adult Education

ADED 4110 Methods and Strategies in Adult Education: Theory and Practice

ADED 4113 Introduction to Distance Learning in Adult Education

ADED 4115 Issues in Adult Literacy

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

Health Education

ED 4451 Health Education

Inclusive Education

ED 4089 Gifted Education: Introduction

ED 5046 Educating At-Risk Students

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

Indigenous Education

INDG 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

International Education

ED 5071 Education in International Contexts

ED 5801 International Baccalaureate Educator Certificate Introductory Professional Seminar

ED 5802 International Baccalaureate Educator Certificate Advanced Professional Seminar

Literacy Education

ED 3362 Access to Literacy
 ED 5105 Connecting Home and Schooled Literacies
 ED 5313 Cultural Studies through Theatre
 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 litt  ratie a l'  l  mentaire I
 ED 5563 La litt  ratie a l'  l  mentaire 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 the Elementary School
 ED 5427 Trends in Mathematics Education
 ED 5428 Mathematics Across the Curriculum
 ED 5429 The Role of Language in the Teaching of Mathematics

Measurement and Evaluation

ADED 5171 Assessing Adult Learning
 ED 5175 Classroom Assessment
 ED 5561   valuation 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

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 5143 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 5512, ED 5514 Special Topics in Science Education I, II
 ED 5513 Advanced Studies in Science Education I
 ED 5515 Science Education and the Learner
 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 enroll.)

Second Language Education

ED 5561   valuation et Apprentissage
 ED 5562 La litt  ratie a l'  l  mentaire I
 ED 5563 La litt  ratie a l'  l  mentaire II
 ED 5564 Introduction to Second Language Education
 ED 5565 Advanced Studies in ESL Education
 ED 5566 Field Experience in TESL
 ED 5568 Fran  ais langue seconde I - Secondaire
 ED 5569 Fran  ais 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:

Education Courses: 48 ch including:

Core Studies:

ADED 3024, ADED 3115, and ADED 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:

ADED 3015 (3 ch) or ADED 5010 (6 ch) Approved practicum, Seminars, and independent study; site of practicum to be negotiated

Curriculum Studies:

Remaining credit hours - Approved courses about the development and delivery of Adult Education programs in institutions of learning, workplaces, and society; adult learning and development; and the nature, scope, and field of Adult Education.

Arts/Science Elective Courses: 30 ch can be made up from arts and science electives.

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.

Outcome:

Preparation for teaching adult learners or for coordinating, developing, or managing programs of adult 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.

Education Courses: 48 ch including

Core Studies:

ADED 3024, ADED 3115, and ADED 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:

ADED 3015 (3 ch) or ADED 5010 (6ch) Approved practicum, Seminars, and independent study; site of practicum to be negotiated

Curriculum Studies:

Remaining credit hours - Approved courses about the development and delivery of Adult Education programs in institutions of learning, workplaces, and society; adult learning and development; and the nature, scope, and field of Adult Education.

Arts/Science Elective Courses: 12 ch can be made up from arts and science electives.

Occupational/Technical/Academic Specialization Courses: Approved electives or credit for prior experience. At least half the credits for the BEd degree must be UNB credits. Of the 60 ch required for the two-year Consecutive BEd in Adult Education a maximum of 6ch is allowed for prior learning. 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:**

ADED 4032 Adult Learners with Exceptionalities

Field Studies**Adult Education:**

ADED 3015 Practicum in Adult Education

ADED 5010 Advanced Practicum in Adult Education

ADED 5011 Preparing for Prior Learning Assessment

History, Philosophy and Practice**Adult Education:**

ADED 3011 Professional Ethics for Practitioners of Adult Education

ADED 3115 Methods and Strategies in Adult Education

ADED 4042 Introduction to Adult Education

Human Development and Learning**Adult Education:**

ADED 3024 Understanding the Adult Learner

ADED 4102 Transition to Adulthood

ADED 5022 Transformative Learning

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Independent Studies

ED 4191, ED 5191 Independent Studies

ADED 5156 Special Topics in Adult Education

Social, Cultural and Political Contexts of Education

Adult Education:

ADED 3114 Introduction to Workplace Learning

ADED 4012 Diversity and Inclusion in Adult Learning

ADED 4045 Issues in Training and Development

ADED 4061 Advising and Mentoring Adult Learners

ADED 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, Abenaki, Innu, Innu, 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 methods course, and half of the practicum involved with teaching 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 5003, ED 5175, ED 3051, ED 3043, ED 4685, ED 5075, ED 3031, ED 5097, ED 3021

Language Certificate (15 ch): I INDG 3685 or INDG 3686, INDG 3695 or INDG 3696, INDG 4675 or INDG 4696, INDG 4676 or INDG 4697, ED 5586

Other Teachable Courses (15 ch): ENGL 1103, ENGL 1104, ED 3043, INDG 3684, INDG 4686

Practicum (18 ch): ED 4000

WBEd (4-Year, Elementary) Course Roll-out

Year 1: Fall

INDG 3684 Aspects of Mi'kmaq and Wolastoqey Culture
INDG 4686 Wabanaki Worldviews
ED 3033 Teaching in a cultural context
ED 5175 Classroom Assessment

Year 1: Winter

ED 5355 Literacy Learning in the Early Years
ED 5102 Curriculum and Evaluation in the Early Years
ED 5359 Cultivating Proficient Readers
ED 4688 Teaching First Nations Children's Literature

Year 1: Summer

ED 3051 School Law and Organization
ENGL 1103 Fundamentals of Clear Writing
ENGL 1104 Fundamentals of Effective Writing

Year 2: Fall

ED 5001 Teaching and Learning Theories I (2 ch)
ED 5002 Teaching and Learning Theories II (2 ch)
ED 5003 Teaching and Learning Theories III (2 ch)
INDG 3685 Mi'kmaq Language I
INDG 3695 Mi'kmaq Language II
or
INDG 3686 Wolastoqey Latuwewakon I
INDG 3696 Wolastoqey Latuwewakon II

Year 2: Winter

ED 5505 Teaching Science in Elementary School
ED 5506 Nature of Science
ED 5507 Indigenous Perspectives in Science

Year 2: Summer

ED 5209 Creativity and Visual Arts in Teaching and Learning
ED 5243 Music in the Elementary School
ED 5478 Health and Physical Education in Elementary School
ED 3063 Health Promotion in Schools

Year 3: Fall

ED 3415 Developing Numeracy
ED 3416 Developing Geometrical Concepts
ED 5424 Teaching Math in Elementary School
ED 5425 Indigenous Mathematics

Year 3: Winter

ED 3031 Education of Exceptional Learners
ED 5097 Differentiating Instruction in the Classroom
ED 3021 Human Development and Learning: an Overview
ED 5075 History of Education

Year 3: Summer

INDG 4675 Mi'kmaq Language III
INDG 4676 Mi'kmaq Language IV
Or
INDG 4696 Wolastoqey Latuwewakon III
INDG 4697 Wolastoqey Latuwewakon IV
ED 5976 Instructional Technology across the Curriculum
INDG 4697 Wolastoqey Latuwewakon IV
ED 5976 Instructional technology across the curriculum

Year 4: Fall

ED 5621 Introduction to Social Studies in Elementary Education
ED 5627 Contact and Post-Contact around the World
ED 5645 Treaties and Canadian Geography
ED 5586 Mi'kmaq and Wolastoqey Language Teaching Methods

Year 4: Winter

ED 4000 Practicum (18 ch)

Year 4: Summer

ED 3043 Indigenous Education
ED 3053 Wabanaki Schools in New Brunswick
ED 4685 Treaty Education

BEd in Early Childhood Education (2-year)

The BEd in ECE consists of the completion of 78 credit hours that focuses on the understanding of current early childhood research, theory, 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 3020 Practicum
ED 3043 Indigenous Education
ED 3211 Introduction to Art & Creative Education
ED 3415 Developing Numeracy
ED 3511 Introduction to Science Education
ED 3475 Movement Education for the Elementary Teacher
ED 4021 Practicum

ED 4054 Research in Early Childhood Studies
ED 4361 Multi-modal Literacies in Early Childhood Education
ED 4363 Children's Literature, Singing, Poetry and Performance
ED 4452 Health, Equity and Well-Being
ED 5062 Cultural Constructions of Childhood
ED 5102 Curriculum and Evaluation in the Early Years
ED 5103 Project Approach in the Early Years
ED 5104 Observation and Pedagogical Documentation
ED 5105 Connecting Home and School Literacies
ED 5106 Digital Literacies in the Early Years
ED 5167 Interpreting Play for Curriculum Development
ED 5175 Classroom Assessment

- ED 5181 Feminist Theory and Education
 ED 5182 Problem Solving with Young Children
 ED 5242 Music for the Classroom Teacher
 ED 5355 Literacy Learning in the Early Years
 ED 5362 Symbolic Representation in Children's Play, Pictures and Print

Certificates and Diplomas

Wocopsqoltine weci Spiqiahtuweq/Weli'kwejik Elaqsultiek Program

The Faculty of Education offers a Wocopsqoltine weci Spiqiahtuweq/Weli'kwejik Elaqsultiek (growing from the roots, soaring together) 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 Spiqiahtuweq/Weli'kwejik Elaqsultiek students register for four courses each term. Course schedules are individually planned in consultation with the Faculty in which the student plans 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 Spiqiahtuweq/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 Certificate in Adult Education consists of a minimum of 36 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:

Education Courses: 36 ch including:

Core Studies:

ADED 3024, ADED 3115, and ADED 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:

ADED 3015 (3 ch) or ADED 5010 (6 ch) Approved practicum, seminars, and independent study; site of practicum to be negotiated.

Curriculum Studies:

Remaining credit hours - Approved courses about the development and delivery of Adult Education programs in institutions of learning, workplaces, and society; adult learning and development; and the nature, scope, and field of Adult Education.

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:

- Required:
ED 5355 Literacy Learning the Early Years
- Three
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
- A practicum in a K-3 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 5561, ED 5562, ED 5563 (elementary stream)
OR
ED 5561, ED 5568, ED 5569 (secondary stream)
2. A practicum in an FSL context (at least 50%)

ED 5621 Introduction to Social Studies in Elementary Education

Length of program options:

- Full Time - two years, 6 full terms (4 courses per term on split term basis)
 Part Time - maximum five years to complete
3. The New Brunswick Oral Proficiency Interview (Minimum of Advanced Plus for French immersion, and Advanced for all other FSL teaching contexts)
 4. ED 5575 (Reflection on Second Language Theory and Practice) is not required but it is highly recommended.

Eligibility

In order to be eligible to enroll 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
 - 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. TOEFL iBT: overall 101 with minimum of 23 in listening, 24 in reading, 27 in speaking and 27 in writing
2. IELTS Academic: overall 7 with minimum of 7 on each skill area
3. Minimum level of Advanced on the New Brunswick Oral Proficiency Interview (OPI)

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 9 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 Educator Certificate in Teaching and Learning - 10-month BEd Students

This certificate is awarded through partnership with the International Baccalaureate. The certificate is designed to give pre-service teachers the skills, knowledge, and qualifications to teach in an IB World School. The certificate is awarded externally, by the IB, after successful completion of:

1. Two IB related courses
 - ED 5801: Introductory IB Professional Seminar
 - ED 5802: Advanced IB Professional Seminar
2. Regular engagement with IB professional communities of practice including practicing IB teachers, mentors, IB Educator Certificate students and more.
3. IB practicum: minimum 7 weeks in an IB World School
4. Capping Inquiry/Summer Showcase: As part of the School Years BEd program, all students are required to complete a summer showcase project. Evidence of an IB theme is required for IB Educator Certificate students.
5. Participation in post-practicum debrief session in summer session.

Eligibility:

Students must be full-time students currently enrolled in the B.Ed. school years program and must indicate interest at time of application. Note: Students are required to complete a minimum of 7-weeks of practicum in an IB World School, which may require relocation, at the student's expense.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

International Baccalaureate Educator Certificate in Teaching and Learning - Practicing Teachers (online)

This online certificate is awarded through partnership with the International Baccalaureate. The certificate is designed to give practicing teachers the skills, knowledge, and qualifications to teach in an IB World School. The certificate is awarded externally, by the IB, after successful completion of:

- Two IB related courses
 - ED 5801: Introductory IB Professional Seminar
 - ED 5802: Advanced IB Professional Seminar
- Regular engagement with IB professional communities of practice including practicing IB teachers, mentors, IB Educator Certificate students and more.
- Capping Inquiry/Summer Showcase: As part of the final module, all students are required to complete a capstone project. This project is to be completed in consultation with practicing IB teachers.

Eligibility:

Students must have a teaching certificate and/or a Bachelor of Education issued by a certified institution.

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:

- First Nations history, government, politics, business economics
- Relations with Canada: law, Indian Act, services treaties, land claims
- Negotiation practices and procedures
- Development and maintenance of healthy workplace relationships
- Practical experience in one or more work placements
- Expert instruction, with First Nations instructors when possible
- Use of distance education technology and on-site course delivery
- Research and proposal writing
- 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 6ch 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	INDG 3056 Practicing Leadership in First Nations Community Projects	INDG 3114 Introduction to Workplace Learning
	INDG 3686 Introductory Wolastoqey Language	INDG 3696 Intermediate Wolastoqey Language	ECON 1015 Microeconomic s Through an Indigenous Lens

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

	INDG 4665 First Nations Perspectives & Organizational Behaviour	ADM 1192 Business Planning and Entrepreneurship	
	INDG 1411 Introduction to Finite Math	ENGL 1104 Fundamentals of Effective Writing	
Year 2 Credits Earned: 30 And Certificate Complete	INDG 3055 First Nations Leadership Foundations	INDG 3621 Current Topics in Self-Governance	INDG 3922 Technology in Governance and Leadership
	INDG 4194 Peace and Friendship Treaties	INDG 3684 Aspects of Wolastoqey and Mi'kmaq Culture	SOCI 3635 Conflict Resolution
	ADM 1213 Financial Accounting	ADM 2223 Managerial Accounting	Certificate Complete
	ECON 1025 Macroeconomics Through an Indigenous Lens	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:

- Professional Growth
- Early Childhood
- Elementary Education
- Literacy Education
- French Immersion Education
- French Second Language Education
- Mathematics and Literacy Education
- Science Education
- Social Studies Education

Consult the Faculty for course requirements.

Regulations for DAUS Not Covered by General University Regulations

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 grade of D shall meet the prerequisite requirements for DAUS courses unless otherwise stated in the Calendar.
- In course offerings of other Faculties/Departments, students must meet the prerequisite requirements of that Faculty/Department.
- A grade of C shall be the minimum acceptable grade in courses for the DAUS.
- 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.

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 core of mathematics, computer science, general science, and geomatics subjects; and
- 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 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)
Land Administration
GGE 3022 Survey Design and Analysis
Surveying Design Practicum or GGE 3024 Survey Design Practicum (Off-campus)
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 4303 LiDAR Fundamentals
GGE 4313 Photogrammetry
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
Gravity Field in Geomatics
GGE 5242 Global Navigation Satellite Systems for Geodesy
GGE 5311 Advanced Hydrography
GGE 5322 Computer Vision - Methods and Python Implementation
GGE 5341 Machine Learning and AI in Geomatics
GGE 5401 Geospatial Development
GGE 5402 Geographic Databases
GGE 5404 Online Spatial Data Handling
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 II
GGE 5833 Land Use Planning for Geomatics
GGE 5901 Special Studies in Geomatics I
GGE 5902 Special Studies in Geomatics II
GGE 5903 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 GGE 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.

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 Section B of this Calendar will govern any point not covered by the General Regulations of the

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 students' 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:** A 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 (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:	MacLaggan 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 Undergraduate Fredericton/Humber College: Kelly Scott-Storey, BN, MN, PhD

- Associate Dean (Moncton): Emily Richard, BHKin, MSc, BScN, PhD Aquino-Russell, Catherine, BScN (LU), MN (UofM), PhD (Curtin, Australia), Prof - Moncton - 2002
- Balcolm, Sarah, BA (Dal), BScN (Dal), MN (UNB), PhD (UNB) Asst Prof - 2018
- Batty, Mary-Lou, BN (UNB), BA (Dal), MN (UNB), PhD (UNB) Teaching Professor - 2010
- Burke, Dawn, BN (UNB), MN (Dal), Teaching Professor - 2010
- Busolo, David, BSc (U of Eastern Africa), MPH (Loma Linda U), 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), Associate Teaching Professor - 2016
- Durepos, Pamela, BScN, MSc, PhD (McMaster), Asst Professor - 2020
- Fullarton, Becky, BN (UNB), MN (UNB), Associate Teaching Professor - 2017
- Gaudet, Bev, BN (UNB), MN (Athabasca), Teaching Professor - 2003

- Gilliss, Mary-Lee, BN(UNB) MN (Athabasca), Assistant Teaching Professor-Moncton-2021
- Gordon, Renée, BScN (Lakehead), MSc Global Health (McMaster), Teaching Professor - 2017
- Hamilton, Sharon, BScN (SHU), MSc (Yale), Teaching Professor - 2011
- Hickey, Jason, BSc (Dal), MScN (McGill), PhD (Manchester), Assoc Prof - 2017
- Hodgins, Marilyn, BSN (UWO), MN (U of A), PhD (Alta), Professor - 1998
- Huckins, Megan, BN (UNB), MN-NP (UNB) Asst Teaching Professor-2022
- Irek, Shyanne, BN (UNB), MN (Western), Assistant Teaching Professor - Moncton - 2019
- Irving, Nicole, BN (UNB), MN (UNB), Teaching Professor - 2013
- Keough, Alisha, BN (UNB), MN (Athabasca), Teaching Professor - 2017
- McAllister, Beth BScN (UPEI), MPH (UofT) Asst Teaching Professor-2022
- Morris, Patricia, BA (STU), BN (UNB), MN (UNB), PhD (UNB) Asst Professor-2022
- O'Donnell, Sue, BN (UNB), MN (UNB), PhD (UNB), Assoc Prof - 2014
- Paynter, Martha, BA (McGill), MEc (Dal), BscN (Dal), Msc (McMaster), PhD (Dal)-Asst Professor-2022
- Richard, 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), Teaching Professor - 2007
- Scott-Storey, Kelly, BN (UNB), MN (UNB), PhD (UNB), Assoc Professor - 2011
- Taylor, Petrea, BN (UNB), MN (UNB), PhD (UNB), Asst Professor - Moncton - 2020

- Theriault, Nancy BN (MUN), MScN-NP (Wisconsin), Asst Teaching Professor-2021
- Robinson, Heidi, BN (UNB), MN (UNB) - Teaching Professor - 2017
- Ursel, Karen, BN (U of M), MHSA (Dal), Teaching Professor Moncton- 2016
- VanSlyke, Stephen, BN (UNB), MN (UNB), Teaching Professor - 2003
- Webster, Jessica, BN (UNB), MN (UNB), Teaching Professor - 2007
- Williams, Claire, BN (UNB), MN (UNB), Assistant Teaching Professor - Moncton - 2020
- Wilson, Haley, BSc (UNB), BN (UNB), MN (UNB) Assistant Teaching Professor, 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 (BNAP) is completed in six terms (Fall, Winter and Summer) over the course of two years, beginning in September of each year. BNAP 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 BNAP 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.

CASPer Test

Admission decisions are based on the applicant's admission average or Grade Point Average (GPA) (60% weight) and the CASPer score (40% weight). All applicants to UNB's Nursing programs are required to complete the CASPer test, an online Situational Judgement Assessment, as part of the application process. This includes applicants to the four-year Bachelor of Nursing on both campuses; the LPN to BN Pathway, and the Bachelor of Nursing Accelerated Program through UNB Fredericton, and the LPN to BN Bridge program through UNB Saint John. An applicant may write the CASPer test once per year. Applicants who have taken the test in previous years will be required to re-take it if reapplying for admission.

Nutshpiluwewick Admission Pathway

The Faculty of Nursing, Fredericton campus and Moncton site, and the Department of Nursing and Health Sciences, UNB Saint John follow the Nutshpiluwewick (Fredericton) and Indigenous Admissions Pathway (Saint John).

UNB recognizes and respectfully acknowledges that the land on which our campuses are located is the traditional unsundered and unceded traditional lands of the Wolastoqiyik and Mi'kmaq Peoples. This territory is covered by the

"Treaties of Peace and Friendship" which the Wolastoqiyik, Mi'kmaq, and Peskotomuhkati Peoples first signed with the British Crown in 1725. The treaties did not deal with the surrender of lands and resources but in fact recognized Wolastoqiyik, Mi'kmaq, and Peskotomuhkati title and established the rules for what was going to be an ongoing relationship between nations. UNB's Faculty of Nursing and Department of Nursing and Health Sciences UNB Saint John welcomes applications from Indigenous students and is committed to the decolonization of admissions processes and the fulfillment of the Truth and Reconciliation Committee's Calls to Action to bridge the educational attainment gap and student success rates, increase the number Indigenous nurses, and to do so in a way that recognizes the value of Indigenous knowledge.

The Mi'kmaq-Wolastoqey Centre, Nutshpiluwewick (Healing Clan), the Faculty of Nursing (UNBF) and the Department of Nursing and Health Sciences (UNBSJ) have identified an admissions pathway for applicants with Indigenous ancestry (First Nation, Inuit, and Métis). These applicants are invited to participate in an Indigenous student enrolment strategy - the Nutshpiluwewick (Indigenous) Admission Pathway - which aims to increase the number of Indigenous nurses in a culturally responsive way, a process that has been developed with the heart and spirit of Indigenous ways of knowing and being. Applicants who choose this pathway will undergo a wholistic review by an Indigenous Selection Committee. Indigenous applicants are required to meet the minimum application requirements for all UNB Nursing Programs and apply using the general application form. Applicants who choose the Nutshpiluwewick Admission

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Pathway will not have the CASPer score factored into their admission process.

For additional information about this Pathway please contact Nutsihpiluwewick Director at nutsihpiluwewick@unb.ca for UNB Fredericton and Moncton. Contact the Indigenous Advisor at UNBSJ (unbsjreg@unb.ca). Indigenous applicants who do not meet minimum admission requirements are encouraged to apply to UNB's Mi'kmaq-Wolastoqey Centre's Wocopsqoltime weci Spiqiyahtuweg / Welik'wejkj Elaqsultiek program.

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. Accelerated Program Degree students must complete the program within 4 years of enrollment 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 91 credit hours in Nursing, 26 required credit hours in other faculties, and 9 credit hours of open electives. Students enrolled in the Accelerated Program degree Program must complete 79 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 (3 ch), NURS 1225 (3 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 1305 (4 ch), NURS 1235 (3 ch), NURS 1236 (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 (3 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 (3ch).

Summer Session: NURS 2063 (3 ch).

YEAR III

Term 1: NURS 3065 (4 ch), NURS 3068 (4 ch), NURS 3092 (3 ch), BIOL 2251 (3 ch).

Term 2: NURS 3072 (3 ch), NURS 3074 (4 ch), NURS 3082 (3 ch), Open elective (3ch).

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 Bachelor of Nursing Accelerated Program

The Accelerated Program in Nursing is intended for applicants with at least 46 credit hours of university courses who wish to earn a Baccalaureate Degree in Nursing.

To be eligible for the Accelerated 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 46 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 46 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 46 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 Accelerated BN Program.

Program Prerequisites Are:

1. BIOL 1711 or equivalent: Human Anatomy I (4 ch) (BIOL 1709 online course option through UNB College of Extended Learning)
2. BIOL 2251 or equivalent: Microbiology (3 ch) (BIOL 2259 online course option through UNB College of Extended Learning)
3. STAT 2263 or equivalent: Statistics for Non-Science Majors (3 ch) (STAT 2263 online course options through UNB College of Extended Learning)
4. BIOL 2501 or equivalent: (Pathophysiology I (3 ch)) (BIOL 2509 online course option through UNB College of Extended Learning)
5. BIOL 2792 or Equivalent: Human Physiology 1 (3ch) (BIOL 1789 online course option through UNB College of Extended Learning)

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 2022 Start

YEAR I

Term 1: NURS 1121 (3 ch), NURS 1135 (3 ch), NURS 1136 (4 ch), NURS 1142 (4 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 (3 ch), NURS 3082 (3 ch), NURS 3092 (3 ch).

Term 5: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4124 (5 ch).

Term 6: NURS 4153 (12 ch), NURS 4185 (3 ch)

September 2023 Start

YEAR I

Term 1: NURS 1121 (3 ch), NURS 1135 (3 ch), NURS 1136 (3 ch), NURS 1142 (4 ch).

Term 2: NURS 2133 (4 ch), NURS 3065 (4 ch), NURS 3068 (4 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 (4 ch), NURS 3082 (3 ch), NURS 3092 (3 ch).

Term 5: NURS 4113 (3 ch), NURS 4121 (3 ch), NURS 4124 (5 ch).

Term 6: NURS 4153 (12 ch), NURS 4185 (3 ch)

Credit Hours Requirements for Nursing Programs

Four Year BN Degree Program Minimum 126 ch

Advanced Standing Degree Program Minimum 82 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

BACHELOR OF PHILOSOPHY IN INTERDISCIPLINARY LEADERSHIP

Renaissance College

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FACULTY

Dean: Carol Nemeroff, BA (McGill), MA (UPennsylvania), PhD (UPennsylvania)

- Mira Bachvarova, BA (Trent), MA (Carleton), PhD (Queen's)
- Ola Tjornbo, BA (Cambridge), MSc (Stockholm), PhD (Balsillie School of International Affairs, Waterloo/Wilfred Laurier)
- Julia Fursova, BSc (University of Medicine), M. Adult Education (St. FX), PhD (York)

General Information

The Renaissance College Undergraduate Interdisciplinary Leadership Program is a 126 credit hour program. Renaissance College courses take the form of in its classes, seminars, forums, and internships, and are complemented with by other UNB courses for the required minor and electives. Graduates of the Bachelor of Philosophy in Interdisciplinary Leadership gain knowledge and experience in the field of leadership studies, knowledge in another discipline equivalent to at least a UNB minor, and an integrative, interdisciplinary understanding of a broad range of current societal issues.

Program Features

- An understanding of leadership across different situations and cultures
- A breadth of 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
- A self-reflective, metacognitive approach to meeting designated knowledge-based and experiential learning outcomes
- A Canadian internship designed to provide practical work and leadership experience

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) (Pharmacotherapeutics), 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 (4 ch), NURS 3092(3 ch), BIOL 2251 (3 ch).

Term 2: NURS 3072 (3 ch), NURS 3074 (4 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 elective (3 ch).

Term 2: NURS 4153 (12 ch), NURS 4185 (3 ch).

- An international internship designed to foster cross-cultural perspectives
- The program can be completed in an accelerated, three-year plan by taking intensive summer internships following years 1 and 2
- A wide range of community-based partners 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.

- 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.
- The maximum time period between the first registration in the Renaissance College program and the completion of the degree is seven (7) years.
- 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.
- In exceptional circumstances, and with the approval of the Dean, alternative arrangements may be made in lieu of the Canadian internship or international Placement to meet degree requirements.
- 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.
- In course offerings of other Faculties/Departments, students must meet the prerequisite and other requirements of that Faculty/Department.
- Each student's program of study must be approved by the College advisor.
- 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.
- Students must be in good academic standing (min. 2.0 assessment GPA) in order to register in RCLP 2023 Canadian Internship. Failure

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 Method is a core component of the BPHIL degree, however, students make 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 3 ch
 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 3chs are assigned to a science course. This requirement can be fulfilled by taking either RC 3043 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 (24ch) 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 Student Services and Outreach Coordinator.

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 as the first course towards completion of the minor. With the approval of the Renaissance College Student Services and Outreach Coordinator, up to 6chs 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 to 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 skills 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 15 ch of RCLP courses, including:

RCLP 1001 Leadership Foundations 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 Community 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 coordinator, 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 mature 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 required by their degree program. Students should check with their faculty advisor as well as the Renaissance College Student Services and Outreach 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

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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), 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 - 2017
- Kebbe, Maryam, BSc (Ottawa), MSc (Alberta), PhD (Alberta), Assist Prof - 2023
- 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
- 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 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 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 required core courses.

NOTE: KIN 1001 is considered to be pre-requisite 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-requisite 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

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 on-line 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

Year 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,

SECTION G: FREDERICTON ACADEMIC PROGRAMS

"Honours" is printed on the student's official academic transcript. See academic advisor for application procedures.

- 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.
- 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.
- To graduate with a BRSS Honours, students must meet the following requirements: maintain a minimum CGPA of 3.5

BACHELOR OF SCIENCE

FACULTY OF SCIENCE

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Dean:	P.T. Jayachandran, 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

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.

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

- 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).
- 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 and be registered in SCI 1002.
 - 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 and have completed SCI 1002.
- 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.
- 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 (or ESCI 1703), 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 - 2001
- Benfey, Tillmann J., BSc (McG.), MSc (Memorial), PhD (Br.Col.), Prof - 1989
- Clark, Denise V., BSc (Br. Col.), PhD (S. Fraser), Honorary Res Prof - 1994
- 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 (Joint ForEM) - 1997
- Cunjak, Richard A., BSc (Guelph), MSc (Memorial), PhD (Wa), Emeritus Prof (Joint ForEM) - 1997
- Cwynar, Les C., BSc, MSc, PhD (Tor.), Prof - 1988
- Dahal, Keshav, 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
- 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
- Erickson, Timothy, BSc, MSc, PhD (Alberta), Assoc Prof - 2021
- Forbes, Graham J., BA (York), MA, PhD (Wat.), Prof (Joint ForEM) - 1997
- Gagarinova, Alla, BSc (Tor.), MSc (Wat.), PhD (Tor.), Asst Prof - 2023
- Hamilton, Diana J., BSc (McG.), MSc (Wat.), PhD (Guelph), Adjunct Prof - 2023
- Hayden, Brian, BSc, PhD (Dublin), Assoc Prof, Scientific Director of SINLAB - 2018
- Heard, Stephen B., BSc (Wat.), PhD (Pennsylvania), Honorary Res Prof - 2002
- Hind, Katharine R., BSc (Vic. BC), PhD (UNB), Assistant Teaching Prof - 2022
- Johns, Robert, BSc (St.FX), PhD (UNB), Adjunct Prof - 2012
- Lawrence, Janice E., BSc, PhD (Dal.), Assoc Prof - 2003
- Linnansaari, Tommi, BSc, MSc (Helsinki), PhD (UNB), 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 Teaching Prof - 2016
- Miles, Kelly, BSc (Dal.), MSc (Dal.), Teaching Prof - 2012
- Nedelcu, Aurora M., BSc (Romania), PhD (Dal.), Prof - 2002
- Ollerhead, Jeff, BSc (Guelph), MSc (Tor.), PhD (Guelph), Adjunct Prof - 2022
- Parachnowitsch, Amy, BSc (S Fraser), MSc (Guelph), PhD (Cornell) Assoc Prof - 2018
- Patten, Cheryl L., BSc, PhD (Wat.), Honorary Res 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), Assist Prof - 2013
- Saunders, Gary W., BSc, MSc (Acad.), PhD (S. Fraser), Prof, UNB Chair in Molecular Systematics & Biodiversity - 1995
- Sharp, Lisa, BSc (Br.Col.), MSc (Vic. BC), BCIDP (Vancouver Community College), Teaching Prof - 2001
- Sherrard, Mark, BSc (MTA), MSc, PhD (Guelph), Assoc Teaching Prof - 2020
- Tai, Helen H., BSc (Tor.), PhD (Ottawa), Adjunct Prof. - 2021
- 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

- 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 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 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, 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 BIOL 4090).

Electives

- 12 ch of Arts courses.
- 24 ch of other courses (in almost any field including Biology) * (see NOTE 4).

NOTES: (*)

- 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.
- If STAT 2264 is counted as a first year requirement, then an extra 3 ch of Level III/IV courses must be taken.
- 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.
- 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

- 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 more term courses of first year science lectures (Physics or Earth Sciences).

Level II

BIOL 2003, BIOL 2008, BIOL 2013, BIOL 2018, BIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068; 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 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, 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 BIOL 4090). 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

- 12 ch of Arts courses.
- 24 ch of other courses (in almost any field, including Biology)* (see NOTE 4).

NOTES: (*)

- 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.
- If STAT 2264 is counted as a first year requirement, then an extra 3 ch of Level III/IV courses must be taken.
- 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.
- Some courses offered in other Faculties will not be considered for credit toward a BSc; so, students should see their advisor for course approval.
- 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:**

- 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.
- 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 Concentration	
Recommended courses:	BIOL 3383, BIOL 3883, BIOL 4741, BIOL 4746 or BIOL 4981, BIOL 4773, BIOL 4863, BIOL 4973, 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.
Biology-Psychology Concentration (admission suspended)	
Students interested in biology-psychology should take PSYC 1013 and PSYC 1023.	
Recommended courses:	BIOL 1711 or BIOL 1719, BIOL 2761 or BIOL 2721, BIOL 2792 or BIOL 1782 or BIOL 1789, BIOL 3033, BIOL 3323, PSYC 2203, PSYC 2313, PSYC 2703, PSYC 3033, PSYC 3273, PSYC 3373.
Other Relevant courses:	BIOL 3013, BIOL 3043, BIOL 3058, BIOL 3162, BIOL 3812, BIOL 4123.
Botany Concentration	
Recommended Courses:	BIOL 3083, BIOL 3412, BIOL 3453, BIOL 3541, BIOL 3559.
Other relevant courses:	BIOL 1846, BIOL 3301, BIOL 4351, BIOL 4358, FOR 2505, FOR 3445.
Cell and Molecular Biology Concentration	
Recommended courses:	BIOL 3013, BIOL 3033, BIOL 3043, BIOL 3058, BIOL 3073, BIOL 3207, BIOL 3261, BIOL 3323, BIOL 3581, BIOL 4043, BIOL 4302.
Other relevant courses:	BIOL 3162, BIOL 3241, BIOL 3311, BIOL 3493, BIOL 3593, BIOL 3673, BIOL 3812, BIOL 4123, BIOL 4182, BIOL 4533, BIOL 4581.
Environmental Biology Concentration	
Students 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 2372

SECTION G: FREDERICTON ACADEMIC PROGRAMS

	or ESCI 2272, BIOL 3453, BIOL 3581, BIOL 3633, BIOL 4191, BIOL 4233, BIOL 4351, BIOL 4773; CHEM 2121 and CHEM 2136; ENVS 2003, ENVS 2023; FOR 2281, FOR 3445;
Other relevant courses:	BIOL 1846, BIOL 3083, BIOL 3173, BIOL 3293, 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; 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, BIOL 4581
Other relevant courses:	BIOL 2372, BIOL 3083, BIOL 3301, BIOL 3603, BIOL 3703, BIOL 3873, BIOL 3883, BIOL 4221, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4823.
Forensic Biology Concentration	
Recommended courses:	BIOL 1711 or 1719, BIOL 2761, BIOL 2792, BIOL 3833, BIOL 3834, BIOL 4953, ANTH 1002
Other Relevant Courses	ANTH 3523, ANTH 3525
General Zoology Concentration	
Recommended courses:	BIOL 3603, BIOL 3703, BIOL 3802, BIOL 3873, BIOL 3908.
Suggested field courses:	BIOL 3173, BIOL 3383.
Other relevant courses:	BIOL 3162, BIOL 3593, BIOL 3673, BIOL 3812, BIOL 3883, BIOL 4182, BIOL 4523, BIOL 4691, BIOL 4723, BIOL 4732, BIOL 4741, BIOL 4746 or BIOL 4981.
Human Biology 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 five of the recommended courses in the Fall term in a block format, where the courses are offered consecutively over the term.	
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 3292, BIOL 3603, BIOL 3633, BIOL 4233, BIOL 4393, BIOL 4652 or ESCI 4282, BIOL 4741, BIOL 4746, BIOL 4773.
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 3541, BIOL 3603, BIOL 3673, BIOL 3703, BIOL 3873, BIOL 3883, BIOL 4191, BIOL 4233, BIOL 4351, BIOL 4393, BIOL 4723 or FOR 4723, BIOL 4732, BIOL 4741, BIOL 4773, BIOL 4863, BIOL 4973, FOR 3445.
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), Hon Res 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
- Carroll-Pöhls, Jan, BSc, MSc (Christian-Albrechts University), PhD (Dalhousie), Asst Prof - 2022
- Chibante, Felipe, BSc (McGill), Ma (Rice), PhD (Rice), Assoc Prof (Richard J. Currie Chair in Nanotechnology; Cross Apt - 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, Nouredin, BSc (Rabat), DEA, PhD (Paris), Teaching Prof - 2000
- MaGee, David I., BSc, PhD (UNB), Prof - 1990 and Vice President Research
- Mattar, Saba M., BSc (Alexandria), MSc (Amer U Of Cairo), PhD (McGill), Prof Emeritus - 2015
- Neville, John, BSc (UNB), PhD (UBC), Assoc Prof - 1999 and Chair
- Passmore, Jack, BSc, Dipl Ed (Bristol), PhD (UBC), DSc (Bristol), FCIC, Prof Emeritus- 2007
- Qu, Yang, BSc Honours (Peking), PhD Biochemistry (Calg), Assoc Prof and Cannabis Health Research Chair - 2018
- Reeves, Valerie, BSc, PhD (UNB), Teaching Prof - 2005
- Tait, James, BSc, PhD (Western), Teaching Prof - 2007
- Thakkar, Ajit, BSc, PhD (Queens), FCIC, Prof Emeritus - 2015
- 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: 72 chemistry, 3 biology, 6 mathematics, 18 electives.

Honours by Thesis: 85 chemistry, 3 biology, 6 mathematics, 18 electives.

Honours by Course: 85 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 2201, CHEM 2222, CHEM 2237, CHEM 2321, 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 2002, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3621, CHEM 3637, two of CHEM 4112, CHEM 4222, CHEM 4422, and CHEM 4622, and a minimum of 14 ch from the following lecture courses: CHEM 2321, CHEM 3201, CHEM 3222, 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 3 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 2201, CHEM 2222, CHEM 2237, CHEM 2321, 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 2002, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3621, CHEM 3637, CHEM 4000, three of CHEM 4112, CHEM 4222, CHEM 4422, and CHEM 4622, and a minimum of 18 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 12 ch from the following laboratory courses: BIOL 2028, CHEM 3009, CHEM 3019, CHEM 3236, CHEM 3137, CHEM 4503 (counts as a 3 ch laboratory course), CHEM 4616, CHE 2506, plus electives.

Third and Fourth Year Option 2 (Honours by Course)

BIOL 2023, CHEM 2002, CHEM 2121, CHEM 2136, CHEM 3122, CHEM 3621, CHEM 3637, 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 4503 (counts as a 3 ch lecture course), CHEM 4212, CHEM 4513, CHEM 4601, CHEM 4612, CHE 2501, CHE 5313, CHE 5522, CHE 5714, CHE 5824, and a minimum of 18 ch from the following laboratory courses: BIOL 2028, CHEM 3009, CHEM 3019, CHEM 3236, CHEM 3137, CHEM 4503 (counts as a 3 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: 69 chemistry, 12 biology, 6 mathematics, 18 electives.

Medicinal Chemistry Honours by Thesis: 78 chemistry, 12 biology, 6 mathematics, 24 electives.

Medicinal Chemistry Honours by Course: 80 chemistry, 12 biology, 6 mathematics, 24 electives.

Medicinal Chemistry Major Program

Second Year

BIOL 2023, CHEM 2201, CHEM 2222, CHEM 2237, CHEM 2321, 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 2002, CHEM 2121, CHEM 2136, CHEM 3421, CHEM 3422, CHEM 3523, CHEM 3621, CHEM 3637, CHEM 4416, plus electives.

Fourth Year

BIOL 3493, CHEM 4503, CHEM 4513, CHEM 4422, 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 2201, CHEM 2222, CHEM 2237, CHEM 2321, 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 2002, 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 4212, 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 4212, CHEM 4601, CHEM 4112, CHEM 4222, 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 - 1999
- Enright, Allison, BSc (Ottawa), MSc (Toronto), PhD (Toronto), Asst Prof - 2020
- Keighley, David, BSc (Manchester), PhD (UNB), Assoc Prof - 2004
- Lentz, David R., BSc (UNB), MSc (UNB), PhD (Ottawa), Prof - 2000
- Limoges, Audrey, BSc, MSc, PhD(UQAM), Asst Prof - 2016
- McFarlane, Chris R.M., BSc (Toronto), MSc (Calgary), PhD (Austin), Prof - 2007
- Shaw, Cliff, BSc (Goldsmiths), MSc, PhD (Western), Prof & Chair - 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
- Diane Botelho
- Stephen Donovan
- Jacob Hanley
- Steven McCutcheon
- Randall Miller
- Vernon Singhroy
- Deanne van Rooyen

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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 itinerary 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 Standard 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 major 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. **Earth Sciences, Major Program** - (minimum of 139 ch): This program (or the honours version below) is recommended for students intending to either pursue graduate studies in the Earth Sciences, or whose goal is to become a professional geoscientist. It has more required courses so that the program is designed to meet the current knowledge requirements for professional registration.
2. **Earth Sciences, Honours Program** - (minimum of 147 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 is designed to meet the current knowledge requirements for professional registration.
3. **Geological Studies, Major Program** - (minimum of 135 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.
4. **Geological Studies, Honours Program** - (minimum of 143 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.

All students in the Earth Sciences, Geological Studies and Environmental Geosciences programs will take a common core in the first two years of study (only Geological Studies students may make limited substitutions as indicated). However, by the end of the winter term of the second year,

students must finalize an option and major program stream (Honours may be requested after 3rd year). 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. All required and elective ESCI courses must be passed with a grade of C or better to count toward graduation.

Common Core

First Year (37 ch minimum)

ESCI 1001, ESCI 1006 or ESCI 1026 or ESCI 1703, 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, PHYS 1051 (or PHYS 1061 or PHYS 1071), PHYS 1052 (or PHYS 1062 or PHYS 1072), PHYS 1091, PHYS 1092, or BIOL 1001, BIOL 1006, BIOL 1012, BIOL 1017. Students planning a Geological Studies degree may discuss with the Director of Undergraduate Studies regarding switching MATH 1013 with MATH 1503.

Second Year (33 ch minimum plus 5 ch field school after winter exams)

ESCI 2131, ESCI 2142, ESCI 2211, ESCI 2272, ESCI 2321, ESCI 2602, ESCI 2703, STAT 2264 or STAT 2593, plus two science electives (6 ch minimum) chosen from the following:
PHYS 1051 (or equivalent) and PHYS 1091 (counts as one elective)
PHYS 1052 (or equivalent) 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 satisfy second year requirements. Other sciences may be taken with the approval of the Director of Undergraduate Studies, but students planning on Earth Sciences or Environmental Geosciences program must have taken a full year of physics (PHYS 1051/1052 or equivalents, and 1091/1092) by the end of second year. Students planning a Geological Studies degree need not complete a full year of Physics, and may discuss with the Director of Undergraduate Studies regarding switching the field school (ESCI 2703) to other approved courses totalling 5-6 ch.

Earth Sciences Major Program

Third and Fourth Year (64 ch minimum)

ESCI 3131, ESCI 3322, ESCI 3703, ESCI 4312; one of ESCI4501 or ESCI4512, two of ESCI 3482, ESCI 3492, or ESCI 4461; two of ESCI 4112 or ESCI 4212 or ESCI 4401, plus the following electives:

Electives:

Two ESCI electives at the 2000 level or above. Optional courses not used above may be used as electives.

Twenty-one credit hours of elective courses from any Faculty or Department. Twelve ch from the Faculty of Arts, and an Ethics or First Nations course are recommended. Additional ESCI courses may be counted here up to a maximum of three courses.

Earth Sciences 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 upper level (3000 or 4000) earth science courses. 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 (73 ch minimum)

Course requirements are the same as for the Major program, plus ESCI 4900.

Geological Studies Major Program

Third and Fourth Year (61 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)

At least seven free elective courses (minimum of 21 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.

Geological Studies Honours Program

Entrance to the Geological Studies 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 upper level (3000 or 4000) earth science courses. 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 (69 ch minimum)

Course requirements are the same as for the Major program, plus ESCI 4900.

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 or ESCI 1026 or ESCI 1703, 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, interdepartmental, or interfaculty programs involving the Department of Earth Sciences are not eligible for a Minor in Earth Sciences.

ECONOMICS OPTION

DEPARTMENT OF ECONOMICS

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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, B.Comm (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/pdf/minormajorhonoursform.pdf>

Major in Economics

A Major will consist of 42ch in Economics courses, 63 ch in other Science courses (including CS 1003 or CS 1073) and 21 ch of electives for a total of 126ch. 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 CS 1073, STAT 3083, and STAT 3093. Course selection should normally conform to the following pattern:

First Year (36 ch minimum)

- ECON 1013, ECON 1023, CS 1003 or CS 1073, MATH 1003 or MATH 1053, MATH 1013 or MATH 1063
- 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)

- ECON 3013, ECON 3023, and 6 ch electives in Economics
- Two additional courses of first year science lectures in the same subject area
- STAT 3083, STAT 3093
- 6 ch chosen from List A

NOTE: Students who did not take ECON 1013, ECON 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)

- ECON 4013, ECON 4023, ECON 3665
- A minimum of additional 15 ch (advance level) in Economics
- 21 ch of approved electives (at least 9 ch must be advanced level as defined by the relevant Department)
- 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 equivalents, 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 48ch 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 CS 1073, STAT 3083, and STAT 3093. Course selection should normally conform to the following pattern:

First Year (36 ch minimum)

- ECON 1013, ECON 1023, CS 1003, or CS 1073, MATH 1003 or 1053, MATH 1013 or 1063.
- 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)

- ECON 3013, ECON 3023 and 6 ch electives in Economics
- Two additional term courses of first year science lectures in the same subject area.
- MATH 2003, MATH 2013, STAT 3083, STAT 3093

NOTE: Students who did not take ECON 1013, ECON 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)

- ECON 4023, ECON 4625, ECON 4665
- MATH 2213
- A minimum of 18 additional ch (advanced level) in Economics
- 12 ch chosen from List A (at least 6 ch must be at advanced level as defined by the relevant Department)
- 15 ch approved electives (at least 6 ch must be advanced level as defined by the relevant Department)

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 GEOSCIENCES OPTION

The Environmental Geosciences Option is offered by the Department of Earth Sciences. Consult the Earth Sciences listing for contacts and Faculty.

All students in the Earth Sciences, Geological Studies, and Environmental Geosciences programs will take a common core in the first two years of study. Honours may be requested after 3rd year. 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. All required and elective ESCI courses must be passed with a grade of C or better to count toward graduation.

The Environmental Geosciences Option provides students who have an interest in the environment with the knowledge required to pursue careers or graduate studies in environmentally related geoscience fields, especially in areas related to water resources, climate change, contamination, and remediation.

The Option includes two programs: Major (minimum 142 ch) and Honours (minimum 150 ch). Two required field schools, typically held after exams, for the Major and Honours programs contribute 10 ch to the program totals. Both programs are designed to meet current academic knowledge requirements set by Geoscientists Canada for professional registration in the environmental geoscience stream (see Professional Registration in the Earth Sciences listing of this calendar).

Common Core

First Year (37 ch minimum)

ESCI 1001, ESCI 1006 or ESCI 1026 or ESCI 1703, 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 1051 (or PHYS 1061 or 1071), PHYS 1052 (or PHYS 1062 or 1072), 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 (35 ch minimum, plus 5 ch field school after winter exams)

ESCI 2131, ESCI 2142, ESCI 2211, ESCI 2272, ESCI 2321, ESCI 2602, ESCI 2703, STAT 2264 or STAT 2593, plus two science electives (8 ch minimum) chosen from the following:

PHYS 1051 (or equivalent) and PHYS 1091 (counts as one elective)

PHYS 1052 (or equivalent) 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 second year requirement. Other sciences may be taken with the approval of the Director of Undergraduate Studies, but students must take a full year of physics (PHYS 1051/PHYS 1052 or equivalents, and PHYS 1091/PHYS 1092) and at least one term of Biology (BIOL 1001 and BIOL 1006) in either the first or second year.

Major Program

Third and Fourth Year (66 ch minimum)

ESCI 2022, ESCI 3442, ESCI 3631, ESCI 3713, ESCI 4401, ESCI 4512, one of ESCI 3482 or ESCI 3492, ESCI 4452, GE 5752, ESCI 3282, ESCI 3292

Electives

Three courses at the 2000 level or above (9 ch minimum) from Biology, Chemistry or Environmental Studies that form a coherent group.

Twelve credit hours of elective courses from any Faculty or Department. Faculty of Arts and an Ethics or First Nations course are recommended.

Honours Program

This program is recommended for students intending to pursue graduate studies in environmental geoscience, or whose goal is to become a professional geoscientist.

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 (74 ch minimum)

Course requirements are the same as for the Major program, plus ESCI 4900.

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 of Earth Sciences 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
- Čačić, 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
- Kučerovský, Dan, BSc (W Ont), DPhil (Oxon), Prof - 1999
- Ma, Renjun, BSc, 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 (Chic), Assoc Prof - 2003
- Purdy, Caroline, BA, MSc, BEd (UNB), Sr Teaching Assoc - 2001
- Rangipour, Bahram, BSc (Isfahan UT), MSc (Isfahan), PhD (W Ont), Prof - 2007
- Reynolds, A. Patrick, BA (St FX), MSc, PhD (Qu), Sr Inst - 2013
- Salmani, Mahin, BSc (Isfahan), MSc (U Vic), MS (Ohio St), Sr Inst - 2008
- Sankey, Alyssa, AB (Vassar), MSc, PhD (Mich), Sr Teaching Assoc - 2006
- Seahra, Sanjeev, BSc, PhD (Wat), Prof and Chair - 2010
- Tasić, Vladimir, BSc (Novi Sad), 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 St), Asst Prof - 2017
- Yan, Guohua, BSc (Liaocheng), MSc (Beijing Normal), 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, 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 ECON 3013 (VEE), ECON 1023 (VEE) or ECON 3023 (VEE), MATH 3803 (E), MATH 3843 (E), STAT 3083 (E) or STAT 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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

- At least 4 ch of approved Computer Science courses. CS 2525 and CS 1043 will not be approved.
- 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

- STAT 3083 and STAT 3093. (**NOTE:** These courses may be taken in second year.)
- 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:

- As for the Majors program.
- 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:

- At least 15 ch of STAT at 4000 level, including STAT 4100.
- 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 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:

- 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.
- Major:** The Major programs allow a wider choice of courses outside the Physics Department and a somewhat reduced course load.
- 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.
- 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 totalling at least 9 ch, plus MATH 3243, plus MATH 3413 or CS 3113 or equivalent, plus approved electives totalling 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, 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 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 totalling at least 3 ch plus approved electives totalling 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 totalling at least 18 ch plus approved electives totalling 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 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 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
- 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 (Dal), Assoc Prof - 2016
- O'Sullivan, Lucia, BA, MA (UNB), PhD (Bowl), Prof - 2006
- Palmer, Michael, BS, MS, PhD (Central Michigan), Instructor - 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), Assoc 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, (McG) - 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;

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 Psychology courses 12 ch (3xxx or 4xxx level)
 - Students should take one of PSYC 3151, PSYC 3152, PSYC 3113, PSYC 4123 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)
- 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 18ch (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. 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 (PSYC 37xx or PSYC 47xx) 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

BIOL 1711, BIOL 2023, BIOL 2028, BIOL 2053, BIOL 2103, BIOL 2792, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003

Third and Fourth Years

BIOL 2063, BIOL 2068, BIOL 2761, BIOL 2812, CHEM 2416, CHEM 3421, CHEM 3523, CHEM 3857, STAT 2264

Electives

- 12 ch of Arts courses.
- 15 ch of Biology courses (3000 or 4000 level) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
- 15 ch of Chemistry courses (2000-4000 level) including a minimum of 2 laboratory courses (denoted by the course designation "L" in the course description).
- Other electives to total a minimum of 133 ch.

Pre-Health Profession stream, Honours program (144 ch):

Second Year

BIOL 1711, BIOL 2023, BIOL 2028, BIOL 2053, BIOL 2103, BIOL 2792, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003.

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. Please see the course descriptions for BIOL 4090 and CHEM 4000 for details regarding course admission.

Electives

- 12 ch of Arts courses.
- Honours by course:
 - 21 ch of Biology courses (3000 or 4000 level) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
 - 21 ch of Chemistry courses (2000-4000) including a minimum of 2 laboratory courses (denoted by the course designation "L" in the course description).
- Honours by thesis:
 - 15 ch of Biology courses (3000 or 4000 level) including a minimum of 2 laboratory or field courses (denoted by the course designation "L" in the course description).
 - 18 ch of Chemistry courses (2000-4000) including a minimum of 2 laboratory courses (denoted by the course designation "L" in the course description).
- Other electives to total a minimum of 144 ch.

Comprehensive Stream, Majors Program (132 ch)

Second Year

BIOL 2023, BIOL 2028, BIOL 2053, BIOL 2103, CHEM 2121 or CHEM 2201, CHEM 3122 or CHEM 2222, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, STAT 2264.

Third Year

BIOL 2063, BIOL 2068, CHEM 2416, CHEM 3421, CHEM 3523, CHEM 3857, one of CHEM 3621, PHYS 3993 or PHYS 3892, any 2 Biology courses (3000 or 4000 level).

Fourth Year

BIOL 4272, CHEM 4503, CHEM 4513, any 2 Biology courses (3000 or 4000 level). By fourth year, students must choose between Honours by course and Honours by thesis. For Honours by thesis add BIOL 4090 or CHEM 4000. Please see the course descriptions for BIOL 4090 and CHEM 4000 for details regarding course admission.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

Electives

1. 12 ch of Arts courses.
2. 8 ch of Biology courses (3000 or 4000 level) or Chemistry courses (2000-4000 level) including a minimum of 1 Biology laboratory or field course (denoted by the course designation "L" in the course description) and 2 Chemistry laboratory courses.
3. Other electives to total a minimum of 133 ch.

Comprehensive stream, Honours program (144 ch):

Second Year

BIOL 2023, BIOL 2028, BIOL 2053, BIOL 2103, CHEM 2121 or CHEM 2201, CHEM 3122 or CHEM 2222, CHEM 2421, CHEM 2422, CHEM 2601, MATH 2003, STAT 2264.

Third Year

BIOL 2063, BIOL 2068, CHEM 2416, CHEM 3421, CHEM 3523, CHEM 3857, one of CHEM 3621, PHYS 3993 or PHYS 3892, any 2 Biology courses (3000 or 4000 level).

Fourth Year

BIOL 4272, CHEM 4503, CHEM 4513, any 2 Biology courses (3000 or 4000 level). By fourth year, students must choose between Honours by course and Honours by thesis. For Honours by thesis add BIOL 4090 or CHEM 4000. Please see the course descriptions for BIOL 4090 and CHEM 4000 for details regarding course admission.

Electives

1. 12 ch of Arts courses.
2. Honours by course:
 - 20 ch of Biology courses (3000 or 4000 level) or Chemistry courses (2000-4000 level) including a minimum of 1 Biology laboratory or field course (denoted by the course designation "L" in the course description) and 2 Chemistry laboratory courses.
3. Honours by thesis:
 - 11 ch of Biology courses (3000 or 4000 level) or Chemistry courses (2000-4000 level) including a minimum of 1 Biology laboratory or field course (denoted by the course designation "L" in the course description) and 2 Chemistry laboratory courses.
4. Other electives to total a minimum of 144 ch.

BIOLOGY-MATHEMATICS/STATISTICS OPTION

Biology is a quantitative discipline and mathematics underpins all sub-disciplines in Biology. Students with a strong quantitative 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 permission to take BIOL 2023, BIOL 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 or MATH 3103 (MATH 3103 recommended), 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 3003, MATH 3043, MATH 3073, MATH 3103, MATH 3113, MATH 3413, MATH 3403
 - 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 CGPA 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 Majors 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 2342, 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 Majors degree.

BIOLOGY-PSYCHOLOGY OPTION

The Biology-Psychology program offers two streams: General and Neuroscience. The General stream is for those that want to explore a diverse assortment of Biology and Psychology courses without a specialization. The Neuroscience stream is for those that specifically wish to focus on neuroscience. Either stream can be done as a major or an honours (with thesis).

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 or PSYC 3113 (taken in 3rd or 4th year), PSYC 1013, PSYC 1023, Plus either ESCI 1001 and ESCI 1012 or PHYS 1051 and PHYS 1052.

Second YearBIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068, CHEM 2401, PSYC 2103, PSYC 2603, PSYC 2113, PSYC 2703, plus any two of PSYC 2203, PSYC 2313, PSYC 2403.

Third and Fourth YearsBIOL 2053 and BIOL 2103, plus PSYC 4053. Other required courses depend on the stream in which you are enrolled. You will pick one of the following streams for a major (134 ch):

(1) General Stream

- 24 ch upper-level (3xxx, 4xxx) biology.
- plus four (12 ch) advanced level Area 6 or Area 7 Psychology courses (36cc, 46xx, 37xx or 47xx) and four (12 ch) general advanced level Psychology courses (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
- 6 ch of electives

OR

(2) Neuroscience Stream

- BIOL 3873, BIOL 3323, and BIOL 3033 (9 ch)
- 15 more ch of 3rd/4th year Biology courses chosen from the following categories:
6 ch from physiology and anatomy
BIOL 1711, BIOL 2761, BIOL 2792, BIOL 3713, BIOL 3802, BIOL 3908, BIOL 3812,
6 ch from cellular
BIOL 3043, BIOL 3073, BIOL 3162, BIOL 3593, BIOL 3013, BIOL 3058, BIOL 3293, BIOL 4043
- Three Area 7 courses in psychology (PSYC 37xx or PSYC 47xx) plus one advanced Area 6 or 7 course (12 ch).
- Four general advanced level Psychology courses 12 ch (PSYC 3xxx or PSYC 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
- Plus 6 ch of electives

Honours Program (146 ch)

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 Biology or Psychology.

For the honours program (with thesis), students must follow the regulations for either the Psychology honours program or the Biology honours program, depending on the home department of their intended research supervisor.

Biology: Students wishing to do their honours research in the Department of Biology must make arrangements to complete their dissertation research with a Faculty member in the department before applying for admission to the program. Application to the honours program is made by writing a letter of intent to the Chair of Biology, usually before the end of year 3, indicating their supervisor(s) and a brief description of the research to be conducted. Students must have (and maintain) a minimum CGPA of 3.0 to be accepted in and remain in the program.

Course requirements (12 ch above the Major): 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).

Psychology: Students wishing to do their honours in the Department of Psychology will normally apply to the Department in their third year. 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.

Course requirements (12 ch above the Major): Students must take one of PSYC 3151, PSYC 3152, PSYC 3113, PSYC 4123. Students must

complete one Honours seminar (PSYC 4110), and the Honours thesis.

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 2342, 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 3321, 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-PHYSICS 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 3321, PHYS 2327, PHYS 2331, PHYS 2342, 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 3321, 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 or MATH 3103 (MATH 3103 recommended), MATH 3043, and two courses chosen from MATH 3033, MATH 3073, MATH 3213, MATH 3243, MATH 3373, MATH 3473, MATH 3803, 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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, 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 2342, 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 3321, PHYS 3336, PHYS 3342, PHYS 3351, plus 3 ch Physics elective.

Fourth Year

STAT 3083, PHYS 3371, PHYS 4322, 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 2203, MATH 2213, PHYS 2311, PHYS 2312, PHYS 2327, PHYS 2331, PHYS 2342, PHYS 2351, PHYS 2372, CS 1003, plus 3 ch elective.

Third and Fourth Years

MATH 3043 or MATH 3503, MATH 3243, MATH 3413, STAT 3083, PHYS 3321, PHYS 3336, PHYS 3342, PHYS 3351, PHYS 4322, PHYS 4332, 15 ch Mathematics electives*, 15 ch Physics electives, plus 3 ch electives.

* It is recommended that students choose MATH 3033 and MATH 3213 and at least one of MATH 3003 and MATH 3103 (MATH 3103 recommended).

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)

-ENVM 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 *e.g.* ABRG3684-Maliseet&Mi'qmaq Culture (3ch); ABRG4194-Peace&Friendship Treaties (3ch); ENR3000-Indigenous Issues & Perspectives (3ch)

-One course in Ethics *e.g.* PHIL 2201 Intro to Ethics (3 ch); PHIL 3206 Environmental Ethics (3 ch); PHIL 3208 Ecological Ethics (3 ch)

-Two (additional) environmentally related 3ch-courses from the Faculty of Arts, *e.g.* ANTH 1003 Environment and Climate Change; ANTH 3111 Resource Conflicts; ANTH 3113 Environment and Infrastructure; CCS3405/MAAC3405-Media and Environment; ECON1013-Microeconomics; ECON3755-Environmental Economics; ECON3766-Economics of Climate Change; PHIL3422-Philosophy of Science; POLS1803-Politics of Climate Change; POLS3217-Canadian Environmental Policy; POLS4725-Climate & Energy Policy; SOCI3553-Sociology & the Environment

-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 ENVM 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, 6 ch).

Winter: one of the following pairs BIOL 2013, BIOL 2018, or BIOL 2053, BIOL 2103; BIOL 2063, BIOL 2068; STAT 2264; one Arts elective (3 ch, see general outline for example courses)

3rd and 4th Year (minimum of 68 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS 1091; MATH 1503 or MATH 2213; ESCI 2272/BIOL 2372; ESCI 3442; ESCI 4452; PHYS 2902; SCI 4999;

-Field Studies: one of BIOL 3173, BIOL 3383, BIOL 4443, the Marine Block Semester, or equivalent;

-Climate Change: one of BIOL 4351, ESCI 3292;

-GIS: one of FOR 1285, FOR 2281, GGE 3423;

-First Nations Studies: One course: see general outline for example courses

-Ethics: One course: see general outline for example courses

-One, or two (if none taken in 2nd Year), Arts elective, see general outline for example courses

-at least one course from each of the following 5 biology subgroups;

minimum 21 ch:

(Molecular & Cell Subgroup): BIOL 3013, BIOL 3033, BIOL 3043I, BIOL 3073, BIOL 3162, BIOL 3242, BIOL 3261, BIOL 3311, BIOL 3323, BIOL 4043

(Organismal Subgroup): BIOL 1846, BIOL 3083, BIOL 3261, BIOL 3493, BIOL 3603, BIOL 3673, BIOL 3703, BIOL 3802, BIOL 3812, BIOL 3873, BIOL 3883, BIOL 4581, BIOL 4691, BIOL 4732, BIOL 4741, BIOL 4823, BIOL 4981

(Population, Community and Ecosystem Subgroup): BIOL 3113, BIOL 3293, BIOL 3633, BIOL 4393, BIOL 4641, BIOL 4652, BIOL 4773, BIOL 4851, BIOL 4863, BIOL 4973

(Analytical Skills Subgroup): BIOL 3058, BIOL 3113, BIOL 3207, BIOL 3293, BIOL 3908, BIOL 3933, BIOL 3943, BIOL 4182, BIOL 4368, BIOL 4393, BIOL 4523, BIOL 4533, BIOL 4563, BIOL 4746, BIOL 5473, CHEM 2121 and CHEM 2136, CHEM 2201 and CHEM 2237

(Applied Biology Subgroup): BIOL 4191, BIOL 4233, BIOL 4302

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; CHEM 2201, CHEM 2222; CHEM 2121, CHEM 3122;

Two of CHEM 2416, CHEM 2237, CHEM 2136;

Also:

Fall: BIOL 2003, BIOL 2008; ENVS 2003.

Winter: one of the following pairs BIOL 2013, BIOL 2018, or BIOL 2053, BIOL 2103; MATH 1503 or MATH 2213; STATS 2264.

Fall or Winter: one Arts elective (3 ch, see general outline for example courses);

3rd and 4th Year (minimum of 62 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-PHYS 1051 or PHYS 1061 or PHYS 1071, PHYS;

-One lecture and laboratory pairing from CHEM 3000-4000 (4-5 ch): recommend CHEM 4112 and CHEM 3137;

-BIOL 2023;

-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, 4ch, 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, BIOL 3383, BIOL 4443, ESCI 1703, or equivalent

-Climate Change: one of BIOL 4351, ESCI 3292;

-GIS: one of FOR 1285, FOR 2281, GGE 3423

-First Nations Studies: One course: see general outline for example courses.

-Ethics: One course: see general outline for example courses.

-One, or two (if none taken in 2nd Year), Arts electives, see general outline for example courses.

-Five stream courses from the following (minimum 15 ch): BIOL 1846;

BIOL 2028; BIOL 2063 and BIOL 2068; BIOL 3013; BIOL 3033; BIOL

3043; BIOL 3073; BIOL 3113; BIOL 3162; BIOL 3261; BIOL 3311; BIOL

3633; BIOL 3801; BIOL 3812; BIOL 3933; BIOL 3943; BIOL 4043; BIOL

4302; BIOL 4773; CHEM 2321; CHEM 2601; CHEM 3137; CHEM 3201;

CHEM 3422; CHEM 3523; CHEM 3601; CHEM 4112; CHEM 4212;

CHEM 4222; CHEM 4422; CHEM 4416; ESCI 2602; ESCI 3282; ESCI

3631

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; STAT 3083; PHYS 1051 or PHYS 1061; PHYS 1091;

one Arts or free elective (3 ch, see general outline for example courses)

Also, one of the following pairs: CHEM 2121 and CHEM 2136; CHEM 2201 and CHEM 2237

Winter: MATH 2213; STAT 3093; PHYS 1052 or PHYS 1062; PHYS 1092;

CS 1073; one Arts or free elective (3 ch, see general outline for example courses)

3rd and 4th Year

(minimum of 64 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-BIOL 2003, BIOL 2008; BIOL 3933; ESCI 2211 or ESCI 2272 or ESCI

2602; ESCI 3442; ESCI 4452; ENVS 2003; PHYS 2902; SCI 4999

-Field Studies: one of BIOL 3173, BIOL 3383, BIOL 4443, ESCI 1703, or equivalent

-Climate Change: one of BIOL 4351, ESCI 3292

-GIS: GGE 3423

-First Nations Studies: One course: see general outline for example courses

-Ethics: One course: see general outline for example courses

-One or two (if not taken in 2nd Year) Arts elective, see general outline for example courses

-One (if not taken in 2nd Year) free elective (can be from the stream's list below).

-Five stream courses from the following (minimum 15 ch): MATH 2013;

MATH 3043 or MATH 3503; MATH 3003, MATH 3103; MATH 3113;

MATH 3073; MATH 3413; MATH 3473; MATH 4142; MATH 4563; STAT

3373; STAT 4043; STAT 4053; STAT 4073; STAT 4083; STAT 4293;

STAT 4443

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

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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, ESCI 2211, ESCI 2602; BIOL 1001, BIOL 1006

Winter: ESCI 2142, ESCI 2321; BIOL 1012, BIOL 1017; MATH 1503 or MATH 2213; STAT 2264

And: ESCI 2703 (Field School, 2 weeks) after April exams

3rd and 4th Year

(minimum of 65 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-BIOL 2003, BIOL 2008; CHEM 2121, CHEM 2136; ESCI 3442; ESCI 4452; ENVS 2003; PHYS 2902; SCI 4999

-Climate Change: ESCI 3292

-GIS: GGE 3423

-First Nations Studies: One course: see general outline for example courses

-Ethics: One course: see general outline for example courses

-Two Arts electives, see general outline for example courses

-One of: ESCI 3482 or ESCI 3492

-One of: ESCI 3631; ESCI 4501; ESCI 4512

-Three stream courses from the following (but not to include any course already taken above, min. 9 ch): ESCI 2272; ESCI 3131; ESCI 3322; ESCI 3411; ESCI 3482; ESCI 3492; ESCI 3621; ESCI 3703; ESCI 3713; ESCI 4212; ESCI 4401; ESCI 4412; ESCI 4461; ESCI 4472; ESCI 4501; ESCI 4512; ESCI 4612

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; PHYS 2351; MATH 2003; BIOL 1001, BIOL 1006; CHEM 2421

Winter: PHYS 2312; MATH 2013, MATH 2213; BIOL 1012, BIOL 1017; CHEM 2422

3rd and 4th Year (minimum of 73 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-PHYS 2331, PHYS 2341, PHYS 3331, PHYS 3351, PHYS 3883; PHYS 2372, PHYS 2902, PHYS 3322, PHYS 3342, PHYS 3752

-BIOL 2003, BIOL 2008; ESCI 2211 or ESCI 2272, or ESCI 2602; ESCI 3442; ESCI 4452; ENVS 2003; SCI 4999

-Field Studies: one of BIOL 3173, BIOL 3383, BIOL 4443, ESCI 1703, or equivalent

-Climate Change: one of BIOL 4351; ESCI 3292;

-GIS: one of FOR 1285, FOR 2281, GGE 3423

-First Nations Studies: One course: see general outline for example courses

-Ethics: One course: see general outline for example courses

-Two Arts electives, see general outline for example courses

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 3.7 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.

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, ESCI 2211, ESCI 2602; BIOL 1001, BIOL 1006

Winter: BIOL 1012, BIOL 1017; MATH 1503 or MATH 2213; PHYS 2902; STAT 2264; one ESCI elective (see below) or Arts elective (3 ch)

3rd and 4th Year (minimum of 69 ch for a Major; see your academic advisor for optimal timetabling and any alternatives that may be available)

-BIOL 2003, BIOL 2008; CHEM 2121, CHEM 2136; ESCI 3631; ESCI 3442; ESCI 4452; ENVS 2003; SCI 4999

-Field Studies: ESCI 3713 (after April exams)

-Climate Change: ESCI 3292

-GIS: GGE 3423

-First Nations Studies: One course: see general outline for example courses

-Ethics: One course: see general outline for example courses

-One, or two (if none taken in 2nd Year), Arts elective, see general outline for example courses

-One pairing of the following (8 ch): ESCI 2321, ESCI 4401; ESCI 2321, ESCI 4512; or ESCI 2272, ESCI 3282

-Four stream courses from the following (but not to include any course already taken above, min. 12 ch): ESCI 2142; ESCI 2272; ESCI 2321; ESCI 2703; ESCI 3282; ESCI 3482; ESCI 3492; ESCI 4212; ESCI 4401; ESCI 4501; ESCI 4512; BIOL 2063 and BIOL 2068; BIOL 4773; BIOL 4973; CHEM 2201; CHEM 2401 or CHEM 2421; CHEM 2416; CHEM 3122; CHEM 3137; ENR 2114; ENR 2531; ENR 3201

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.

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 with a GPA of 2.5 or higher 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 85 credit hours of courses at UNB. For graduation, students must have completed the UNB portion of the degree as well as successfully completed the MLT program at NBCC-SJ.

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

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.

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.

- 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.

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, Classical Studies, Classics, Comparative Cultural Studies, Criminology and Criminal Justice, Drama, Economics, Economics Studies, English, French, Gender and Women's Studies, History, International Development Studies, Law in Society, Media Arts & Cultures, Philosophy, Political Science, Psychology, Socio-Cultural Studies in Health, or Sociology.

Programs of Study

First Year

1. ARTS 1013 and ARTS 1023 (6 ch). Note that students who have successfully completed ARTS 1000, ARTS 1100 OR ARTS 1001 and ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
2. 6 term lecture courses in first-year Science ([MATH 1003](#) or [MATH 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

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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, 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

Program of Study (5 Years)

First Year

1. ARTS 1013 and ARTS 1023. Note that students who have successfully completed ARTS 1000, ARTS 1100, ARTS 1001, OR ARTS 1002 have already completed the equivalent requirement and cannot take ARTS 1013 and ARTS 1023 for credit.
2. 6 term lecture courses in first-year Science ([MATH 1003](#) or [MATH 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 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.

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, Comparative Cultural Studies, Criminology and Criminal Justice, Economics, Economics Studies, English, French, History, Media Arts and Cultures, Philosophy, Political Science, Psychology, Socio-Cultural Studies in Health, 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 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.

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 enroll 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.

BACHELOR OF SCIENCE IN ENGINEERING PHYSICS

DEPARTMENT OF PHYSICS/DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

General Office:	I.U.C - Physics & Administration Building, Rooms 206/209	Head Hall, Room D36
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Phone:	506-453-3723	506-453-4561
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Website:	https://www.unb.ca/fredericton/science/depts/physics/	https://www.unb.ca/fredericton/engineering/depts/ece/index.html

General Information

Engineering Physics is the study of the combined disciplines of physics and engineering. This area of study is grounded in applied physics with an emphasis on research, design and development to solve modern challenges. Engineering Physics bridges the gap between theoretical science and practical engineering by teaching students to use physics to tackle emerging engineering challenges, and to apply engineering solutions to address fundamental questions in science. Engineering Physics students will graduate with a Bachelor of Science in Engineering Physics (BScEP).

This degree is administered jointly by the Department of Electrical and Computer Engineering in the Faculty of Engineering and the Department of Physics in the Faculty of Science. Students have the choice between two different streams: **Space Systems Engineering**, which covers topics such as spacecraft design, radar, and satellite communication; and **Optical Engineering**, where students will learn about lasers, photonic systems, and fiber-optic communication. Students completing the above degree programs in Engineering Physics will have fulfilled the academic requirements for licensure as a professional engineer in Canada. The BScEP is designed as a four-year program (totalling 160 ch), or five years if undertaken in conjunction with the Co-op Program. Students are strongly encouraged to participate in the

BACHELOR OF SCIENCE IN ENGINEERING**FACULTY OF ENGINEERING**

General Office:	Head Hall, Room C-28
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Phone:	(506) 453-4570
Fax:	(506) 453-4569
Email:	deaneng@unb.ca
Website:	http://www.unb.ca/fredericton/engineering
Dean:	Joshua Leon, BSc, MSc, PhD, PEng

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 CS 1303. 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.

Co-op program, as it is widely recognized that the experience gained is a valuable component of an Engineering Physics background.

Program Requirements

Core Courses - 145 ch

First Year (common to all Engineering Physics Streams) 34 ch

ENGG 1001, ENGG 1003, ENGG 1015, PHYS 1052, PHYS 1081, PHYS 1092, CS 1003, CHEM 1982, CHEM 1987, MATH 1003, MATH 1013, MATH 1503

Second Year (common to all Engineering Physics streams) - 38 ch

ECE 2214, ECE 2215, ECE 2711, ECE 2722, PHYS 2311, PHYS 2312, PHYS 2342, PHYS 2351, PHYS 2372, CS 1023, MATH 2513, MATH 3503

Third Year (41 ch total) i

Common Courses: ECE 3111, ECE 3221, ECE 3511, ECE 3232, ECE 3312, PHYS 3321, PHYS 4322

Space Systems Engineering: PHYS 3431, PHYS 3432, PHYS 3437, PHYS 3481, PHYS 4972

Optical Engineering: PHYS 3336, PHYS 3342, PHYS 3351, PHYS 3371, PHYS 3452

Fourth Year (32 ch total)

Common Courses: ENGG 4000, ENGG 4013, ECE 4253, PHYS 4832, GGE 3342, GGE 5322

Space Systems Engineering: PHYS 4421

Optical Engineering: PHYS 4476

Electives - 15 ch

Complementary studies (12 ch): At least 3 ch must be related to technology and society (e.g., HIST 3925 - Technology and Society, SOCI 2534 - Technology and Social Change); 3 ch must come from Humanities and Social Sciences (Anthropology, Classics, Literature, History, Philosophy, Political Science and Sociology); 3 ch in Economics (e.g., ECON 1073 - Economics for Engineers); the remaining 3 ch may be taken from the Faculty of Arts, the Faculty of Business, or through approval of the program coordinator. It is recommended that students take 3 ch of English writing (e.g., ENGL 1103 - Fundamentals of Clear Writing). No more than 3 ch of language courses may be used for credit toward the degree.

Basic science electives (3 ch): At least 3 ch of basic science electives are required from Astronomy (e.g., ASTR 1033 - Astronomy), Chemistry (e.g., CHEM 1303 - Introduction to Environmental Chemistry), Biology (e.g., BIOL 1001 Biological Principles, Part I), or Earth Science (e.g., ESCI 1001 - The Earth: Its Origin, Evolution and Age).

Associate Dean Academic:	Juan A. Carretero, BEng, MSc, PhD, PEng
Associate Dean Research & Graduate Studies:	Tiger Jeans, 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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. All Engineering students must complete program-approved safety training prior to gaining access to laboratories or conducting any experimental work. Departments will provide safety training each year.

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.

The 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 student status while being on a Co-op work term.

Co-op Program Eligibility and Approval:

- Student must be registered as full-time student in an undergraduate engineering degree program at UNB.
- Students must be in good academic standing. However,
 - A student who has completed the first term of engineering studies at UNB must have a Cumulative GPA of at least 2.7.
 - A student in terms 2 to 4 of engineering studies at UNB must have a most recent Assessment GPA of at least 2.7.
- Eligibility and suitability to enrol in the Co-op Program is assessed by the Co-op Office.
- A detailed degree continuation plan must be submitted by the student to the Co-op Office.
- 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

- Work terms usually commence at the beginning of January, May, and September.
- Academic planning is done in consultation with the academic advisor or designate for the student's specific engineering program.

Co-op Work Term Requirements:

- Students must have completed at least two terms of full-time engineering-related courses at UNB prior to their first Co-op work term.
- 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.
- A student who has completed two years of full-time engineering-related courses is eligible for work terms of 4 to 16 months.
- 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.
- A co-op fee is charged for each 4-month portion of a work term.
- 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.

- 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.
- A student is limited to a maximum of 6 work terms totalling no more than 24 months.
- 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).
- 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
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Email:	chemeng@unb.ca
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FACULTY

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- Chibante, Felipe, BSc Chemistry (McG), PhD (Rice), MArts (Rice), MChem (Rice), Assoc. Prof. - 2007
- Collins, Frank, BScE (UNB), PEng, Associate Teaching Professor and Assist. Dean 1st Year - 2002
- Cook, William, BScE, MScE, PhD (UNB), PEng, Prof, Dept. Chair, Director CNER - 2004
- Eic, Mladen, Dipl. Ing. (Sarajevo), MSc (Zagreb), MSc (Worcester Poly. Inst), PhD (UNB), PEng, Prof - 1990
- He, Zhibin (Ben), PhD (UNB), MScE Chem.Eng, BSE Chem Eng (Shaanxi Univ. Science & Tech), PEng, Asst Prof - 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, and Canada Research Chair in Pulping Technology - 1993
- Palazhchenko, Olga, BSc (Hons) Chemistry, MSc Materials Chemistry (UOIT), PhD Chem. Eng. (UNB), PEng, Asst Prof - 2021
- 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 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 Steam Supply Systems (3 ch)
 CHE 5804 Nuclear Chemical Processes (3 ch)
 CHE 5824 Corrosion Process (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 Nuclear 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)
 BIOL2023 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, ENVM, 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 I (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 pre-requisite.

** some option courses require that BIOL 1006 be taken as a pre-requisite.

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 being on an 8 months of longer Co-op work term.

CIVIL ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

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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), FCSCE, FACI PEng, Hon Res Prof - 1992
- Christie, James S., BScE, MScE, PhD (UNB), PEng, Hon Res Prof - 2014
- Hanson, Trevor, BScE, MScE, PhD (UNB), PEng, 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
- Hossack, Ashlee, BScE, PhD (UNB), PEng, Asst Prof - 2023
- Joyce, Tom, BScE, MScFE (UNB), PEng, Asst Teaching Prof - 2022
- Lei, Zhen, BEng, MSc (Alberta), PhD (Alberta), PEng, Asst Prof and OSCO Research Chair in Offsite Construction - 2019
- Lloyd, Alan E. W., Dip Tech (Camosun), BEng (Lakehead), MAsC, PhD (Ottawa), PEng, Assoc 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 (Unindes), 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
- Steele, Taylor C., BSCE (UNB), PhD (McMaster), Asst Prof - 2022
- Waugh, Lloyd, BScE (UNB), MS, Engr, PhD (Stan), FCSCE, FEIC, PEng, Hon Res Prof - 1984
- Yevdokimov, Yuri, BSc (Sumy), MA (Academy of Sciences), MSc (Ill), PhD (Manit), Prof (Joint Economics) - 1999

Adjunct Professors

- McGuigan, Benjamin, BScE, PhD (UNB), PEng, Adjunct Prof - 2018
- Robak, Anna, BScE, ME (Asian Inst.), PhD (South Australia), PEng, Adjunct Prof - 2019
- 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 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 Introduction to Pavement Engineering
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.

ELECTRICAL ENGINEERING

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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FACULTY

- Biletskiy, Yevgen, MCS, PhD (Kharkiv), PEng, Prof - 2003
- Bubbar, Kush, BSc, MEng (Wat), PhD (UVic), PEng, Assist Prof - 2018
- Castillo-Guerra, Eduardo, BSc, MSc (UCLV), PhD (UNB), PEng, Prof - 2006
- Cardenas Barrera, Julian, BSc, PhD (UCLV), PEng, Assoc Prof - 2022
- Diduch, Christopher, BScE, MScE, PhD (UNB), PEng, Prof - 1981
- Englehart, Kevin, BScE, MScE, PhD (UNB), PEng, Prof - 1998
- -Leon, Joshua, BSc, MSc, PhD (Dal), PEng, Prof - 2022
- 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, Dharendra, BEng, MSc (Bradford), MBA (Ottawa), PhD (King's College, UK), PEng, Prof - 2009
- Wilson, Adam, 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, BScE, 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
 CS 3113 Intro to Numerical Methods (or MATH 3413)
 ECE 1813* Electricity and Magnetism
 ECE 2021 Electrical Design, Experimentation, and Measurements
 ECE 2214 Digital Logic Design
 ECE 2215 Digital Logic Design Laboratory
 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 and Statistics for Engineers
 TME 3313 Managing Engineering and Information Technology Projects
 * Denotes course in general first year (Engineering I)
 ** ENGG 4000 prerequisites for electrical engineering students: CS 1023 or CS 1083, ECE 3031 and 46 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:

- At least 3 ch must be related to technology and society (examples: HIST 3925 Technology and Society, SOCI 2534 Technology and Social Change).
- An additional 3 ch must come from Humanities and Social Sciences (Anthropology, Classics, History, International Development Studies, Literature, Philosophy, Political Science and Sociology).
- 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 Systems Design
 ECE 4273 VLSI Systems 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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 System Design

ECE 4323 Modern Computer 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 Communications and Networking ME 2003 Dynamics for Engineers

Power & Renewable Energy Systems (Electric, Machines, Power Devices)

ECE 4133 Instrumentation Design

ECE 4433 Safety Critical Systems 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 Communications

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 Engineering

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 enroll 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. Enrollment 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:

- One of the ECE 4040, TME 4025, ENGG 4000 or ECE 4913 with a biomedical application.
- One of the APSC 3953 Basis of Biomedical Engineering (3 ch) or ECE 4923 Intro to Biomedical Engineering (4 ch)
- 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 1782 Human Physiology I (4 ch)

*BIOL 1789 Human Physiology I - Online (4 ch)

*BIOL 2792 Human Physiology - Systems (3 ch)

BIOL 3031 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 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-world 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 enroll 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. Enrollment 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 (4ch)

CS 1103 Introduction to Databases (4ch)

P CS 2053 Introduction to Game Development (4ch)

P CS 2063 Introduction to Mobile Application Development (4ch)

P CS 2333 Computability and Formal Languages (4ch)

*P CS 2383 Data Structures and Algorithms (4ch)

P CS 3413 Operating Systems 1 (4ch)

CS 3543 Database Systems and Administration (3ch)

CS 3873 Net-Centric Computing (4ch)

P CS 4405 Operating Systems II (4ch)

CS 4745 Introduction To Parallel Processing (4ch)

ECE 4133 Instrumentation Design (4ch)

ECE 4242 Computer Architecture (4ch)

*P ECE 4251 Real Time Systems Design (4ch)

ECE 4253 Digital Communications (4ch)

*ECE 4261 Digital Systems Design (4ch)

ECE 4273 VLSI Systems Design (4ch)

ECE 4333 Robotics (4ch)

ECE 4433 Safety Critical System Design (4ch)

*ECE 4531 Digital Signal Processing I (4ch)

ECE 4553 Introduction to Pattern Recognition (4ch)

*ECE 4803 Data Communications and Networking (4ch)

ECE 4823 Communications Network Engineering (4ch)

*MATH 2203 or CS 1303 Discrete Mathematics or Discrete Structures (3ch or 4ch)

SWE 4103 Software Quality and Project Management (4ch)

SWE 4203 Software Evolution and Maintenance (4ch)

P SWE 4403 Software Architecture and Design Patterns (4ch)

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 by the Department of Electrical and Computer Engineering in conjunction with the 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

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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 camps 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 completion within eight terms. Students should pay special attention to the 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 undergraduate 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
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 Natural 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 Introduction to Pavement Engineering
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 & 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 designated as having a substantial writing component, indicated by a (W) in the calendar

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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), PEng, Associate Prof - 2016
- Dare, Peter, BSc (East London), MSc (Erindale College), PhD (East London), PEng, FRICS, Prof - 2000
- Jabari, Shabnam, BScE, MSc (Tehran), PhD (UNB), PEng, Assistant Prof
- Kingdon, Robert, BScE, PhD (UNB), PEng, ANBLS (Assoc.), Associate Teaching Prof - 2014
- Langley, Richard B., BSc (Wat), PhD (York) - Prof - 1981
- Santos, Marcelo, BSc (Rio de Janeiro), MSc (National Observatory), PhD (UNB), PEng, Prof - 2000
- Sheng, Michael B., BScE (UNB), PhD (UNB), ANBLS (Assoc.), Assistant Teaching Prof - 2019
- 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
- Hamilton, Angus, BSc, MSc (Tor), PEng, CLS, 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
- Vaniček, Petr, Geodetic Eng., PhD (Prague), PEng, Prof (1971) - Prof Emeritus - 2001
- Wells, David, BScE (Mt. All), MSc (BrCol), PhD (UNB), PEng, Prof (1980), Prof Emeritus - 1999

Adjunct Professors

- Al-Tahir, Raid, BSc (Baghdad), MSc (OSU), PhD (OSU), Adjunct Prof - 2012
- Ballantyne, Brian, BSc, MSc (Tor), PhD (Otago), LLB (Cal), Adjunct Prof - 2022
- 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
- McGrath, Heather, BSc (McMaster), MScE (UNB), PhD (UNB), Adjunct Prof - 2020
- Mishra, Rakesh, BSc (Allahabad), MCA (Abdul Kalam), PhD (UNB) - 2021
- 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 prior to graduation. 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 core of basic engineering subjects;
- 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.

Students who wish to academically prepare to become a Cat-A Certified Hydrographer should follow the Hydrographic 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. All GGE courses (denoted by 'GGE' in the course number), and some GGE elective courses, will be available remotely through hybrid teaching methods. Some non-GGE courses that can contribute to the degree are also available online. Detailed program information, including remote course availability, 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
 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
 GGE 3022 Survey Design and Analysis
 GGE 3023 Surveying 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 4303 LiDAR Fundamentals
 GGE 4313 Photogrammetry
 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 Computer Vision - Methods and Implementation
 GGE 5341 Machine Learning and AI in Geomatics
 GGE 5401 Geospatial Development
 GGE 5402 Geographic Databases
 GGE 5403 Web Mapping Geospatial Web Services
 GGE 5404 Online Spatial Data Handling
 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 II
 GGE 5833 Land Use Planning for Geomatics
 GGE 5901 Special Studies in Geomatics I
 GGE 5902 Special Studies in Geomatics II
 GGE 5903 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 GGE 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.

Hydrographic Surveying Option within Geomatics Engineering

Students who obtain a Bachelor of Science in Engineering degree in Geomatics Engineering at UNB, and who complete a set of five specified technical electives (GGE 5011, GGE5012, GGE 5042, GGE 5311, and GGE 5083) will have the following notation placed on their UNB transcripts: COMPLETED HYDROGRAPHIC SURVEYING OPTION. This option has been accredited as a Category S5-A level program by the International Hydrographic Organization (IHO), International Federation of Surveyors (FIG), and International Cartographic Association (ICA) International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC).

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
 GGE 3342 Remote Sensing
 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
 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 or GGE 2014, 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), PEng., Associate Prof - 2018
- Carretero, Juan A., BEng (UNAM), MAsc, PhD (Victoria), PEng, Prof and Associate Dean (Academic) - 2002
- Dubay, Rickey, BSc Mech, MSc Mech (UWI), PhD (DalTech), PEng, Prof - 1998
- Gao, Nan, BEng (TU, China), Meng, PhD (McM), Associate Prof - 2021
- Garland, Phil, BScE, PhD (UNB), PEng, Associate Prof - 2012
- Gerber, Andrew G., BScE, PhD (UNB), BA (Ambassador), PEng, Prof - 2000
- Hall, Joseph W., BEng, MAsc, PhD (McM), PEng, Prof - 2007
- Jeans, Tiger, BScE (UNB), MScE (Toronto), PhD (UNB), PEng, Prof and Associate Dean (Research and Graduate Studies) - 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), Associate Prof - 2015
- Raval, Siddharth, BEng (GTU), MScE (UNB), EIT, Assistant Teaching Professor - 2021

SECTION G: FREDERICTON ACADEMIC PROGRAMS

- Saha, Gobinda, BSc (Moscow), MSc (TUDelft), PhD (Dalhousie), PEng, Associate Prof - 2015
- Simoneau, Andy, BEng, MEng, PhD (McM), PEng, Associate Prof and Acting Chair- 2009

Adjunct Professors

- Chen, Zengtao, BEng (Nanjing USt), MEng, Dr. Eng. (Harbin IT), PhD (Wat), PEng, Adjunct Prof - 2014
- He, Youliang, BEng, MEng (SioT China), DEng (Northeastern China), PhD (McGill), Adjunct Prof - 2021

Honorary Research Professors

- Holloway, Gordon, BSc (UNB), MSc, PhD (Ott), Peng, Hon. Research Prof - 1989

Professors Emeriti

- Biden, Edmund N., BScE (UNB), DPhil (Oxford), Prof. Emeritus - 1987
- 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), MSc, 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:

<https://www.unb.ca/fredericton/engineering/depts/mechanical/>

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 2711 Electric Circuits (or ECE 2701)

ECE 3612 Electric Machines (or ECE 2683)

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 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 3221 Manufacturing Engineering I (or ME 3222)

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 3511 Fluid Mechanics

ME 3522 Applied Fluid Mechanics

ME 3524 Fluid Systems and Design

ME 3611 System Dynamics (or ME 3613)

ME 3612 Mechanical Vibration (or ME 4613)

ME 3622 Automatic Controls I (or ME 3623)

ME 3701 Mechanical Engineering Laboratory I

ME 3702 Mechanical Engineering Laboratory II

ME 4281 Manufacturing Engineering II (or ME 4283)

ME 4421 Applied Thermodynamics

ME 4424 Sustainable Energy Systems Design

ME 4701 Mechanical Engineering Laboratory III

ME 4860 Senior Design Project (or ENGG 4000 or TME 4025)

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-requisite(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:

[https://www.unb.ca/fredericton/engineering/depts/mechanical.](https://www.unb.ca/fredericton/engineering/depts/mechanical/) 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 Application of Computational Fluid Dynamics to Industrial 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 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:

<https://www.unb.ca/fredericton/engineering/depts/mechanical>.

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, the following are required: 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 Academic Advisor.

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 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 (4ch)
 KIN 3041 Disability Awareness (3 ch)
 KIN 3061 Advanced Biomechanics (4ch)
 KIN 3161 Human Factors in Ergonomic Design (3ch)
 KIN 4041 Movement Disorders (3ch)
 KIN 4063 Biomedical Instrumentation and Data Acquisitions (3ch)
 KIN 4161 Occupational Biomechanics (3ch)
 KIN 4162 Occupational Health and Safety Ergonomics (3ch)
 KIN 4163 (Workplace Ergonomic Design and Analysis (3ch)
 PHYS 5993 Magnetic Resonance Imaging (3ch)
 STAT 5293 Applied Statistics (3ch)
 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 Cr Hr to 173 Cr Hours 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
- Shukla, Dharendra, 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 enroll in TME core courses. Applicants who are not full-time students may still apply for the TME Diploma (or enroll 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

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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.

BACHELOR OF SCIENCE IN ENVIRONMENTAL MANAGEMENT

General Office:	I.U.C. - Forestry, Room 101
Mailing Address:	EM 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 Environmental Management (BScEM) degree gives students degree options in the interdisciplinary fields of environmental studies and natural resources. The degree offers three majors: "People, Policy & Planning", "Water Resources Management", and "Wildlife Conservation".

BScEM 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 BScEM 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 142 (People, Policy & Planning), 141 (Water Resources major) or 138 (Wildlife Conservation major) credit hours and completion of all core courses are required for the BScEM 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 BScEM 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 People, Policy & Planning, 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 ENVM 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 ENVM 4991

Core (Required) Courses

Common Core

Core courses common to all BScEM 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 An Introduction to Ecology
CHEM 1303* Introduction to Environmental Chemistry
ENVM 1001 Professional Skills in Forestry and Environmental Management
ENVM 1002 Foundations of Environmental Management and Stewardship
ENVM1532 Ecological Modelling
ENVM 2004 Social and Cultural Systems
ENVM 2021 Natural Resource Management, Institutions, Policy and Governance
ENVM 3002 Applied Environmental Management
ENVM3261 Data Analysis for Natural Resources
ENVM 4020 Management Practicum
ENVM 4973 Environmental Management Field Camp
FOR 1001 Introduction to Forestry
FOR 113 Introduction to Wildlife and Aquatic Ecology
FOR 2006 Introduction to Natural Resource Management
FOR 2505 Forest Soils: Formation and Properties
FOR 2881 GIS with Applications in Forestry and Environmental Management
FOR 4545 Biodiversity and Ecosystem Management
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.

People, Policy & Planning Major

POLS 1803 The Politics of Climate Change

ENVM 2023 Climate Change
 ENVM 3000 Indigenous Issues and Perspectives in Natural Resources Stewardship
 ENVM 3457 Forest Watershed and Water Quality Management
 ENVM 4001 Environmental Impact Assessment and Management
 BIOL 4233 Conservation Biology
 FOR 2425 Autecology of Forest Vegetation
 FOR 4545 Biodiversity and Ecosystem Management
 ENVM 5003 Environmental Management Tools

One of the following three:
 ECON 3755 Environmental Economics
 ECON 3766 Economics of Climate Change
 FOR3101 Forest Economics
 POLS3217 Canadian Environmental Policy

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)
 POLS3535 Quantitative Methods in Political Science
 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

ENVM 2023 Climate Change
 ENVM 2114 Water Sustainability, Practise, and Technology
 ENVM 3000 Indigenous Issues and Perspectives in Natural Resource Stewardship
 ENVM 3201 Urban Hydrology Watershed Management
 ENVM 3457 Forest Watershed and Water Quality Management
 ENVM3532 Ecohydrology
 ENVM 4001 Environmental Impact Assessment and Management
 ENVM 4111 Fisheries and Aquatic Techniques
 BIOL 4773 River and Lake Ecosystems
 FOR 2425 Autoecology of Forest Vegetation
 FOR 3303 Remote Sensing in Forestry & Environmental Management
 FOR 5284 LiDAR for Forestry and Environmental Management
 ENVM3261 Data Analysis for Natural Resources
 POLS3217 Canadian Environmental Policy

One of the following three:
 ECON 3755 Environmental Economics
 ECON 3766 Economics of Climate Change
 FOR3101 Forest Economics
 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
 POLS 1803 Politics and Climate Change
 TME 2001 Creativity, Innovation, and Value Creation
 LWSO 2003 Law and Society
 PHIL 2203 Ethical Issues in Business
 PHIL 3206 Environmental Ethics or PHIL 3208 Ecological Ethics
 SOCI 3553 Sociology and the Environment
 POLS Topics in Environmental History and Politics
 FOR5282 Advanced GIS with Applications in Forestry & Environmental Management

Elective List B

BIOL 4741 Fish Biology
 FOR 4545 Biodiversity and Ecosystem Management
 BIOL2008 (Lab in Ecology)
 BIOL4393 (Food Webs)
 BIOL4973 (Special Topics in Aquatic Ecology)

Wildlife Conservation Major

Total number of credit hours from required courses (108 ch) and selections from constrained electives (15 ch) must equal a minimum of 123 ch, (or 119 ch with Honours Thesis). An additional 18 ch of electives is required. Minimum total credit hours needed to graduate is 141.

Required Courses (108 ch)

In addition to those listed in the core common to all EM majors, required courses for the Wildlife Conservation Major include the following.
 FOR 2425 Autoecology of Forest Vegetation
 BIOL 2063 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 15-20 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
 Field Course (other than ENVM 4973), or comparable directed studies.
 Either must be approved by counselor;
 FOR 4425 Conservation Genetics
 FOR 4655 Wildlife Techniques
 ENVM 4111 Fisheries and Aquatic Sciences Techniques
 BIOL 4563 Math Biology
 BIOL 3293 Population Genetics
 FOR 3303 Remote Sensing in Forestry & Environmental Management
 ENVM 4001 Environmental Impact Assessment
 FOR5282 Advanced GIS with Applications in Forestry & Environmental Management

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 Biology or BIOL 4746 Lab Studies in Fish Biology
 BIOL 3883 Entomology
 BIOL 3673 Parasitology or BIOL 4688 Applied Studies in Parasitology
 BIOL 3873 Ethology

Minor Programs

Minors in People, Policy & Planning, 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 People, Policy & Planning

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
 ENVM 2004 Social and Cultural Systems
 ENVM 2021 Natural Resource Mgmt., Institutions, Policy, and Governance
 ENVM 4001 Environmental Impact Assessment and Management

Two courses from:

BIOL 2003 Introduction to Ecology
 ENVM 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 Ecosystem
 BIOL 4863 Environmental Biology
 CE 3403 Introduction to Environmental Engineering
 CE 5411 Water Supply and Wastewater Removal
 CHE 5313 Energy and the Environment
 ENVM2114 Water Sustainability: Practice and Technology
 ENVM3112 Water Resource Management
 ENVM4002 Stakeholder Approaches to Environmental Problem Solving
 ENVS 3005 Environmental Planning: People & Policy
 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
 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 River and Lake Ecosystems
 ENVM 3532 Ecohydrology
 ENVM 3112 Water Resources Management
 BIOL 3663 Biological Oceanography

SECTION G: FREDERICTON ACADEMIC PROGRAMS

ENVM 3201 Urban Hydrology and Water Management
ENVM 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 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 Resource Conservation Genetics

FOR 4545 Biodiversity and Ecosystem Management

FOR 4625 Integrated Management of Insects and Fungi

ESCI 1001 The earth: Its Origin, Evolution and Age

Major Program:

A Major or Secondary Major in any of the programs (People, Policy & Planning, 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 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

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 (UNB), 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
- Costanza, Kara, BA (NY), MS (Maine), PhD (Maine), 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 Univ.), 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 (Western), PhD (Western), Adjunct Prof - 2021
- Jaeger, Dirk, MSc (Gottingen), 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

- Li, Ling, BSc (Nanjing), PhD (Nanjing), PhD (UNB), Adjunct Prof - 2021
- Linnansaari, Tommi, BSc, MSc (Helsinki), 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, MScF (UNB), Associate Teaching Professor - 2021
- Percy, Kevin, BScF (UNB), 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 (UNB), PhD (UNB), Adjunct Prof - 2021
- Smith, Ian, BSc (Sund Poly), MSc (Durh), PhD, (Polyt S Bank), DSc (S Bank), PEng, Professor Emeritus - 1986
- Smith, Ronald, BScF (UNB), MSc (Wisconsin), PhD (Maine), Adjunct Prof - 2018
- Sweeney, Jonathan D, BSc (S.Fraser), PhD (UNB), Adjunct Prof 1999
- St-Hilaire, Andre, BSc (Royal Military), MSc (Moncton), PhD (Quebec), Adjunct Prof - 2021
- Taylor, Anthony, BSc (Memorial), MSc (Lakehead), PhD (Lakehead) - Associate Prof - 2021
- Thompson, Ian, BSc (1975), MSc (York), PhD (Queens), Adjunct Prof - 2021
- Withey, Patrick, BA (Concordia), MA (Memorial), PhD (Victoria), Adjunct Prof - 2021
- Wyatt, Stephen, BScF (Australia), MSc (Laval), 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:

- interact with society to define goals for the forest environment;
- take a leadership role in the design and implementation of plans to ensure achievement of those goals;
- 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 141 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
 ENVM 1001 Professional Skills in Forestry and Environmental Management
 ENVM 1002 Foundations of Environmental Management and Stewardship
 ENVM 2004 Social and Cultural Systems
 ENVM2023 Climate Change

ENVM3261 Data Analysis for Natural Resources
 FOR 1001 Introduction to Forestry
 FOR 2006 Introduction to Natural Resource Management
 FOR2113 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 1432 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
 ENVM 3002 Applied Environmental Management
 FOR 3005 Silviculture and Stand Intervention Design
 FOR 3006 Forest Management Foundations
 FOR 3101 Forest Economics
 FOR 3303 Remote Sensing in Forestry & Environmental Management
 OR FOR 5284 LiDAR in Forestry and Environmental Management
 FOR 3445 Ecology of Populations and Communities
 ENVM 3457 Forest Watershed and Water Quality Management
 FOR 4020 Management Practicum
 FOR 4096 Advanced Topics in Forest Management
 FOR 4545 Biodiversity and Ecosystem Management
 FOR 4625 Natural Disturbance of Forests
 FOR 4973 Forestry Field Camp
 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:

BIOL1001; BIOL 1006 Biological Principles I + Lab
 FOR 1001 Introduction to Forestry
 FOR 2006 Introduction to Natural Resource Management
 FOR 2505 Forest Soils: Formation and Properties
 FOR 3101 Forest Economics
 BIOL 1012; BIOL 1017 Biological Principles II + Lab
 MATH 1823 Calculus for Management Sciences or MATH 1843 Mathematics for Management
 FOR 3006 Forest Management
 ENVM 3201 Urban Watershed Management
 ENVM 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 Forestry 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:

SECTION G: FREDERICTON ACADEMIC PROGRAMS

FOR 1001 Introduction to Forestry

FOR 2006 Introduction to Natural Resource Management

Choose one of the following two:

ENVM 2004 Social and Cultural Systems

ENVM 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 1113 Introduction to Wildlife and Aquatic Ecology

FOR 2425 Autecology of Forest Vegetation

FOR 1432 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

ENVM 3457 Forest Watershed and Water Quality Management

FOR 4425 Conservation Genetics

FOR 4545 Biodiversity and Ecosystem Management

FOR 4625 Natural Disturbance of Forests

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 three:

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 2043 Introduction to Software Engineering

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

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 Environmental Management 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

ENVM2531 Introduction to Hydrometeorology Systems

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 Habitats

BIOL 3301 Taxonomy of the Flowering Plants

BIOL 3459 Economic Botany

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 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), 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 - 2017
- Kebbe, Maryam, BSc (Ottawa), MSc (Alberta), PhD (Alberta), Assist Prof - 2023
- 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
- 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. **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.

Practicum 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 4 ch

STAT 2263 or 2264 or equivalent 3 ch

CHEM 1001 and CHEM 1006 (5 ch)

and

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 27 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 6ch 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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)

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 Introduction to Software Engineering
 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
 SWE 3503 Systems Analysis, Design and Project Management

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)

ECE 1813 Electricity and Magnetism
 ECE2021 Electrical Design, Experimentation, and Measurements
 ECE 2214 Digital Logic Design
 ECE 2215 Digital Logic Design Laboratory
 ECE 2711 Electric Circuits
 ECE 3221 Computer Organization
 ECE 3232 Embedded Systems Design
 ECE 4803 Data Communications and Networking
 or CS 38731 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 40002 Senior Design Project
 or TME 40253 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 SWE 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.

Technical Electives

Each student is required to take 5 technical elective courses chosen from the following list. Other senior level courses that are at least 3 credit hours 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 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 Fundamental of Information Assurance
 CS 4413 Foundations 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
 CS 3113 Intro to Numerical Methods (or MATH 3413)
 ECE 4261 Digital Systems Design
 ECE 4242 Computer Architecture
 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). While students are encouraged to seek out courses of interest and value to them, the choice of courses is subject to the following restrictions and approval by the Software Engineering Coordinator:

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 Anthropology, Classics, History, International Development Studies, Literature, Philosophy, 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.

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 enroll 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. Enrollment 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:

1. One of SWE 4040, TME 4025, SWE 4913 or ECE 4913 with a biomedical application.
2. One of APSC 3953 Basis of Biomedical Engineering (3 ch) or ECE 4923 Intro to Biomedical Engineering (4 ch)
3. The remaining credit hours (16 or 17) must be selected from the following courses. An asterisk denotes highly recommended.

*BIOL 1782 Human Physiology I (4 ch)

*BIOL 1789 Human Physiology I - Online (4 ch)

*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)

JURIS DOCTOR

Faculty of Law FACULTY

Dean: Marin, Michael, BSc (Acadia), MA (Carleton), LLB (Ott), LLM (Cambridge)

Associate Dean: Cotter, Catherine, BA, LLB (UNB), MLIS (UWO)

- Alexander, Basil, BArtsSc (McMaster), LLB, MPA (UVic), LLM (Toronto), Asst Prof - 2019
- Austin, Janet E., BCom, LLB (UNSW), LLM (Sydney), PhD (Toronto), Assoc Prof - 2010
- Bell, David G., BA, MA (Qu), LLB (UNB), LLM (Harv), Prof - 1985
- 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

*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 3031 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)

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 3042 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 3252 Functional Home Anatomy (4 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 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 5993 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 the missing requirement be met by taking an approved University course before transfer to the Bachelor of Science in Software Engineering. 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 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 for 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.

- O'Byrne, Nicole, BSc (Qu), LLB (Sask), BA (Regina), LLM (McG), PhD (UVic), Assoc Prof - 2009
- Panezi, Maria, LLB (UAthens), LLM (NYU), PhD (York), Asst Prof - 2019
- Pearlston, Karen F., LLB (York), LLM (UBC), PhD (York), Assoc Prof - 2001
- Perryman, Benjamin, 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.

SECTION G: FREDERICTON ACADEMIC PROGRAMS

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/>.

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SECTION H: FREDERICTON COURSES

Standard Courses Abbreviations

Academic ESL	AESL
Adult Education	ADED
Anthropology	ANTH
Applied Science	APSC
Arabic	ARAB
Arts	ARTS
Astronomy	ASTR
Biology	BIOL
Business Administration	BA (SJ) ADM (FR)
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 and Computer Engineering	ECE
Engineering	ENGG
English	ENGL
Environmental Engineering	ENVE
Environmental Management	ENVM
Earth Sciences	ESCI
Film	FILM
Forestry	FOR
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
Greek	GRK
Modern Greek	GRKM
History	HIST
Indigenous Studies	INDG
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
Music	MUS

Nursing	NURS
Philosophy	PHIL
Physics	PHYS
Political Science	POLS
Psychology	PSYC
Publishing	PUB
Recreation & Sports Studies	RSS
Russian	RUSS
Sociology	SOCI
Software Engineering	SWE
Spanish	SPAN
Statistics	STAT
Technology Management & Entrepreneurship	TME
University Studies	UNIV

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 and/or UNB's online registration system:

Instructional Formats

C - Class lecture	S - Seminar
L - Laboratory	T - Tutorial
PRAC - Practicum	WEB - Web delivery
R - Reading course	WS - Workshop

Course Elements

A - Alternate year offering	O - Occasional offering
ch or cr - Credit Hours	P - Programming component
EL - Experiential Learning component	W - English Writing component
LE - Limited Enrolment	* - Bi-Weekly offering

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 Course Catalogue (<https://colleaguess.unb.ca/Student/Courses>). Not all courses listed are given every year.

ACADEMIC ESL

See beginning of [Section H](#) for abbreviations, course numbers and coding.

**AESL1000 English as a Second Language 6 ch (3C) (W)
for Academic Purposes**

Focuses on the development and refinement of academic English reading, writing, listening, and speaking skills and inter-cultural competencies necessary to be successful in a UNB degree program. Students at this level may be eligible to enroll in additional courses in their chosen field of study. Course requirements include completion of assignments, research project and presentation, class participation, tests and quizzes, and portfolio submission. Upon successful completion and a minimum grade of B, students may enroll full-time in their Faculty-defined degree program. A mark of CR/NCR is awarded. *Prerequisite:* Students must be accepted into a UNBF degree program through the Program of Academic English Preparation and have met the appropriate English language requirements designated by their chosen faculty.

**AESL1011 English as a Second Language 3 ch (3C) (W)
for 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 enroll 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 3 ch (3C) (W)
for 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 enroll 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 3 ch (3C) (W)
for 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 enroll 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 3 ch (3C) (W)
for 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 enroll 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.

ADULT EDUCATION

ADED3011 Professional Ethics for Practitioners of Adult Education 3 ch (W) (EL)

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. *Students may receive credit for ED 3011: Professional Ethics for Practitioners of Adult Education or ADED 3011: Professional Ethics for Practitioners of Adult Education, but not both.

ADED3015 Practicum in Adult Education 3 ch (EL)

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. Graded on a CR/NCR basis. *Students may receive credit for ED 3015: Practicum in Adult Education or ADED 3015: Practicum in Adult Education, but not both.

ADED3024 Understanding the Adult Learner 3 ch (W) (EL)

Explores 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 a historical and contemporary perspective on adult learning. *Students may receive credit for ED 3024: Understanding the Adult Learner or ADED 3024: Understanding the Adult Learner, but not both.

ADED3113 Communication Practices for Adult Education 3 ch (W) (EL)

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. *Students may receive credit for ED 3133: Communication Practices for Adult Education or ADED 3113 Communication Practices for Adult Education, but not both.

ADED3114 Introduction to Workplace Learning 3 ch (W) (EL)

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. *Students may receive credit for ED 3114: Introduction to Workplace Learning or ADED 3114: Introduction to Workplace Learning, but not both.

ADED3115 Methods and Strategies in Adult Education 3 ch (W) (EL)

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. *Students may receive credit for ED 3115: Methods and Strategies in Adult Education or ADED 3115: Methods and Strategies in Adult Education, but not both.

ADED4012 Diversity and Inclusion in Adult Learning 3 ch (W) (EL)

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 education, poverty, multiculturalism, anti-racism, gender, sexual orientation, indigenization and decolonization and possibly other related issues at the discretion of the instructor. *Students may receive credit for ED 4012: Diversity and Inclusion in Adult Learning or ADED 4012: Diversity and Inclusion in Adult Learning, but not both.

ADED4032 Adult Learners with Exceptionalities 3 ch (W) (EL)

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' existing knowledge base and general approaches for meeting the needs of adult learners with exceptionalities. *Students may receive credit for ED 4032: Adult Learners with Exceptionalities or ADED 4032: Adult Learners with Exceptionalities, but not both.

ADED4042 Introduction to Adult Education 3 ch (W) (EL)

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. *Students may receive credit for ED 4042: Introduction to Adult Education or ADED 4042: Introduction to Adult Education, but not both.

ADED4045 Issues in Training and Development 3 ch (W) (EL)

Explores theoretical and practical components of workplace training designed to improve organizational effectiveness and individual performance. Learners examine emergent training topics in a variety of workplace contexts. *Students may receive credit for ED 4045: Issues in

SECTION H: FREDERICTON COURSES

Training and Development or ADED 4045: issues in Training and Development, but not both.

ADED4061 Advising and Mentoring Adult Learners 3 ch (W) (EL)

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. *Students may receive credit for ED 4061: Advising and Mentoring Adult Learners or ADED 4061: Advising and Mentoring Adult Learners, but not both.

ADED4102 Transition to Adulthood 3 ch (W) (EL)

Explores the nature and consequences of the transition from adolescence to adulthood, and from the 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. *Students may receive credit for ED 4102: Transition to Adulthood or ADED 4102: Transition to Adulthood, but not both.

ADED4110 Methods and Strategies in Adult Education: Theory and Practice 6 ch (W) (EL)

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. *Students may receive credit for ED 4110: Methods and Strategies in Adult Education: Theory and Practice or ADED 4110: Methods and Strategies in Adult Education: Theory and Practice, but not both.

ADED4113 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. *Students may receive credit for ED 4113: Introduction to Distance Learning in Adult Education or ADED 4113: Introduction to Distance Learning in Adult Education, but not both.

ADED4115 Issues in Adult Literacy 3 ch (W) (EL)

Provides an 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. *Students may receive credit for ED 4115: Issues in Adult Literacy or ADED 4115: Issues in Adult Literacy, but not both.

ADED5010 Advanced Practicum in Adult Education 6 ch (EL)

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. Graded on a CR/NCR basis. *Students may receive credit for ED 5010: Advanced Practicum in Adult Education or ADED 5010: Advanced Practicum in Adult Education, but not both.

Prerequisite: ADED*3015, or its equivalent.

ADED5011 Preparing for Prior Learning Assessment 3 ch (W) (EL)

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. *Students may receive credit for ED 5011: Preparing for Prior Learning Assessment or ADED 5011: Preparing for Prior Learning Assessment, but not both.

ADED5022 Transformative Learning 3 ch (W) (EL)

Explores new concepts for working with adult learners. Investigates critical thinking, critical self-reflection and transformative learning. *Students may receive credit for ED 5022: Transformative Learning or ADED 5022: Transformative Learning, but not both.

ADED5156 Special Topics in Adult Education (O) 3 ch (W)

Designed to explore areas of special interest or concern in adult education. *Students may receive credit for ED 5156: Special Topics in Adult Education or ADED 5156: Special Topics in Adult Education, but not both.

ADED5157 Adult Education and Community Development 3 ch (W) (EL)

Explores 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). *Students may receive credit for ED 5157: Adult Education and Community Development or ADED 5157: Adult Education and Community Development, but not both.

ADED5164 Learning with Technology in Adult Education 3 ch (W) (EL)

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. *Students may receive credit for ED 5164: Learning with Technology in Adult Education or ADED 5164: Learning with Technology in Adult Education, but not both.

ADED5171 Assessing Adult Learning 3 ch (W) (EL)

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. *Students may receive credit for ED 5171: Assessing Adult Learning or ADED 5171: Assessing Adult Learning, but not both.

ANTHROPOLOGY

See beginning of [Section H](#) for abbreviations, course numbers and coding.

ANTH1001 Introduction to Sociocultural Anthropology 3 ch (3C)

Explore the meaning of culture, and how the discipline of anthropology understands the concept. Anthropologists immerse themselves in social settings, participating in everyday life to gain a deeper understanding of local beliefs and practices. In learning about this approach to understanding culture, known as ethnographic fieldwork, our aim is to gain a background in sociocultural anthropology, its broad relevance today, and to discover new perspectives on our own unique ways of living and being.

ANTH1002 Introduction to Biological Anthropology 3 ch (3C)

Learn about the human species past, present, and future by exploring topics in biological anthropology including genetics, human evolution, our family tree, primates, human osteology, forensics, and human diversity, and by doing a variety of laboratory and hands-on exercises. Students who received credit for ANTH 1303/ARCH 1303 cannot receive credit for ANTH 1002.

ANTH1003 Environment and Climate Change 3 ch (3C) (W)

Environmental anthropologists study the two-way relationship between human cultures and environments. With a focus on climate change, learn about Environmental Anthropology, how humans transform their environments, and how communities experience environmental change at local and wider scales. Explore how studies of youth climate movements, ecological grief, environmental justice, global health, Indigenous Ecological Knowledge, and western climate science contribute to our understandings of climate change and to our capacity to address the implications of environmental change for ecosystems and cultural worlds.

ANTH1007 Work, Money, and Debt 3 ch (3C) (W)

Explore how people think about work, money, and debt cross culturally. Economic anthropologists engage in the comparative study of humans and their economies in different times and places, and offer cross-cultural understandings fundamental for anyone interested in doing business in a globalized world. Topics include economic anthropology, work and labour, modes of production, systems of exchange, value, money, gifts, commodities, debt, corporations, speculation, finance, and the stock market.

ANTH1301 Introduction to Archaeology 3 ch (3C)

Learn about the development of Archaeology from its earliest beginnings to recent advances in archaeological science through an introduction to the theories and methods used by archaeologists to investigate and understand past human cultures.

Students who received credit for ANTH 1303/ARCH 1303 cannot receive credit for ANTH 1301. Students who received credit for ANTH 1002 for semesters Winter 2018 through Winter 2023 inclusive cannot receive credit for ANTH 1301.

ANTH2011 Environment and Infrastructure 3 ch (3C) (W)

Learn how roads, pipelines, walls, dams, and other infrastructures are the literal frameworks that underpin our everyday lives. Just as infrastructures transform ecosystems, livelihoods, and landscapes, they also generate new experiences of nature, work, and connection to place. Use the perspective of applied environmental anthropology to understand relationships between human environments, infrastructures, and design

frameworks. Examine the impacts of infrastructures on cultural and natural resources, and how impact assessment and human-centered design mitigate such impacts, responding to diverse community needs.

ANTH2012 Language and Culture 3 ch (3C) (W)

Learn how human experiences of the world emerge from the languages used to communicate in everyday life. Read foundational and contemporary studies in linguistic anthropology, the cross-cultural study of language use and communication. Using a range of case studies and ethnographic texts, consider how languages enable the communication of abstract ideas, and how cultural identities are sustained through these acts of communication. Explore issues of language policy and linguistic diversity, literacies and oral traditions, language and place, language vitality and revitalisation, and language use in popular cultures and media.

ANTH2303 Exploring Archaeology 3 ch (3C) (W)

Introduces the central dynamic tensions in Archaeology and their impact on archaeological practice, including their implications for methods and for how archaeologists construct knowledge about the past. 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) (EL)

Discover the basic concepts, approaches, and theories in medical anthropology, a subfield of Anthropology that studies human health problems and healing systems in their broad social and cultural contexts. Learn how medical anthropology contributes to our understanding of complex health-related behaviour. Explore several examples of health and disease models, how medical anthropologists engage in both basic research on health and healing systems, applied research aimed at improving therapeutic care in clinical settings, and public health programs in community contexts.

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.

ANTH2506 Experiential Learning in Medical Anthropology 3 ch (3C) (W) (EL)

Learn hands-on experiential skills in medical anthropology for application in real world settings. Students are taught relevant skills related to Geographic Information Systems (GIS) methods in medical anthropology and public health, policy development and implementation science, qualitative methods including NVivo and other related software packages, and working directly with community partners in New Brunswick for real-time applications of medical anthropology. Students receive basic training and exposure to solving issues for community stakeholders through engagement with community organizations. Provides students with an opportunity to work with Public Health, Horizon Health, and other community partners in New Brunswick. Through project reports, students learn to communicate their proposed solutions to community problems and develop their skills in capacity development and sustainability at the community level.

ANTH2801 Food and Culture (Cross-Listed: SOCI 2801) 3 ch

Introduces theories and methods of 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.

ANTH3015 Animal Studies

3 ch (3C) (W)

Explore the practical, cultural, and moral dimensions of human interactions with non-human animals. Consider how animals are involved in human activities from ritual life to laboratory testing, transport, farming and food production, and care and disability services. These examples are explored in terms of questions about origins and development of animal domestication, and the moral and legal status of wild and domesticated populations, including animal rights and animal ownership across a range of geographic and cultural settings.

ANTH3051 Work-Study in Anthropology (O) 3 ch (3L) (EL)

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.

ANTH3111 Resource Extraction, Conflict, and Resistance 3 ch (3C) (W)

Examine the human consequences of transforming nature into commodities. Cutting timber, digging metals, pumping oil, fracking gas, growing crops, trapping animals, and many other forms of resource extraction are, or have been, essential to the global economy. Explore how extractive practices shape our planetary prospects for ecological and cultural survival. Learn about the conflicts that emerge amidst this commodification of nature. Consider the creative ways that people find to resist extractivism. Topics include diverse case studies and theoretical approaches.

ANTH3112 Drugs, Land and Power 3 ch (3C) (W)

Explore how rural, Indigenous, and Afro-descendent peoples in the Americas see forests, fields, mountains, savanna, wetlands, and rivers as life giving places and as territories that give the good life. The land question matters deeply for many rural communities. With special emphasis on rural areas of Colombia, consider claims for collective title, territory, common property, and self-governance advanced by peasant, Indigenous, and Afro-descendent communities. Topics include Afro-descendent, Indigenous, and peasant social movements, claims for collective territory, the rights of nature, social cartography, agrarian change, and resource conflicts in the context of the criminalization of protest, the ongoing internal conflict, and the war on drugs in Colombia.

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.

ANTH3301 The Archaeology of North America 3 ch(3C) (LE) (W) (EL)
Before Europeans (A)

Explore the cultural history of North America through an in-depth examination of the origins and development of the Indigenous cultures of North America, from the earliest traces to European contact.

ANTH3303 History of Archaeological Thought (A) 3 ch (3C) (LE) (W) (EL)

Learn about the theoretical foundations of anthropological archaeology, including key ethical frameworks and how archaeology is applied in North America.

ANTH3341 Work-Study in Museum Studies and Material Culture Analysis (O) 3 ch (3L) (EL)

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) (EL)

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) (EL)

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. *Prerequisite:* 3 ch of 3000-level

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archaeology and permission of the instructor. Offered concurrently with ANTH 3342.

ANTH3344 Culture and Technology (O) 3 ch (3L) (LE)

Explore the production, use, and circulation of technologies throughout human history and across cultural contexts. Learn comparative anthropological perspectives on the tools, technologies, and the materials used for their production, from the earliest archaeological evidence through to the present.

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) (EL)

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) (EL)

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. *Prerequisites:* 3 ch of 3000-level archaeology and permission of the instructor. Offered concurrently with ANTH 3352.

ANTH3364 Archaeology of Northeastern North America 3 ch (Online) (LE)

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 its core a series of short readings and lectures. Topics covered might include, Contemporary First Nations Communities in the Northeast, Environmental context, The Palaeoindian period and the peopling of Northeast, Early and Middle Archaic, Late Archaic, Terminal Archaic and Early Woodland, Palaeoeskimos in Newfoundland, Middle Maritime Woodland and Ancestral Beothuk, Late Maritime Woodland, European contact, and the Historical archaeology in the Northeast.

ANTH3502 Medical Anthropology and Public Health 3 ch (3C) (W) (EL)

Drawing on medical anthropology for public health programs provides opportunities for improved understanding of, and response to, health problems at community and population levels. The Covid-19 pandemic has shown the pivotal role that medical anthropology plays in public and global health research. Evaluate four specific approaches to public health research and practice in medical anthropology: 1) analysis of public health problems; 2) design of public health interventions; 3) evaluation of public health interventions; and 4) reflexive analysis of public health. We focus on how understanding the sociocultural environment facilitates the adaptation of public health interventions to local settings, increases local uptake, and is likely to increase effectiveness.

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.

ANTH3523 Forensic Anthropology (A) 3 ch (1.5C 1.5L) (W)

Learn about 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, stature, and unique features from skeletal remains. Using decomposition rates, they can provide an estimate of the postmortem interval. Course topics may 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: Ancient Disease in the Human Skeleton 3 ch (2S 1L) (W)

Investigate 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.

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.

ANTH 3552 Bioarchaeology Field School 3 ch (W) (EL)

This field program offers an introduction to mortuary archaeology and bioarchaeological field and lab methods through skeletal excavation. This course emphasizes bioarchaeological ethics, field excavation and recording methods, laboratory data collection, preliminary skeletal and artifact analysis, and skeletal curation and storage. *Prerequisite:* ANTH 3525 (or equivalent) and permission of the instructor.

ANTH3662 Indigenous Peoples of North America (A) 3 ch (3C) (W)

Explore the histories and contemporary lives of Indigenous peoples of North America (Turtle Island), focusing on Indigenous territories within the state boundaries of Canada. Learn how Indigenous societies have both sustained and transformed their material cultures, sociopolitical lives, and cultural beliefs. Consider these transformations across a range of environments, and against colonial orders that have sought to control Indigenous lives and expropriate lands and resources. Learn about the legacy of anthropology as a discipline that emerged as part of colonial orders. Understand the significance of Canadian Indigenous rights movements for Indigenous peoples globally.

ANTH3694 Latin America and the Caribbean 3 ch (3C) (W)

Cultivate an understanding of cultures and places across Latin America and the Caribbean, drawing on case studies by anthropologists and others. Develop a synthetic understanding of both regions and their sub-regions, cultures, peoples, and places. Analyze common themes, important social and cultural issues, and shared histories. Topics may include colonialism; imperialism and underdevelopment; society and culture before the Europeans; gender and sexuality; political economy and development; climate change; conflict and violence; race and ethnicity; religion and spirituality; rural change and urbanization; environmental and ecological movements; and Indigenous and Afro-descendent movements.

ANTH3704 South Asia 3 ch (3C) (W)

Explore a geographical and cultural area with over 5000 years of traditions that still define everyday modern lives today. The South Asian culture area covers India, Pakistan, Nepal, Bhutan, Bangladesh, Burma and Sri Lanka. Centered on the Indian subcontinent, it is predominantly a Hindu and Muslim region, but also includes Christian and Buddhist populations and many other coexisting religious groups. Examine the position of India in relation to its neighbours, and study historical and contemporary issues including poverty and economic progress, the role of women, and the impact of globalization. Participants learn how religions provide charters for a hierarchically organized society, and regulates the attitudes, beliefs, and practices in contemporary lives throughout this globally significant culture area.

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 or SOCI 3801.

ANTH4025 Hunters and Gatherers (A) 3 ch (3S) (LE) (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.

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 sociocultural, archaeological, biological, or medical anthropology perspective.

ANTH4114 Culture and Environment 3 ch (3S) (W) (EL)

Examines how culture mediates the relationship between humans and their environment, including traditional ecological knowledge and/or local knowledge systems.

ANTH4244 Political and Legal Anthropology (O) 3 ch 3S (W)

Explore how societies organise power, negotiate social order, and address conflict via formal legal institutions, and less formal processes in everyday life. Often working with colonial governments, many early anthropologists were concerned with subjects of authority, leadership, property ownership, and landholding that were fundamental to the colonial rule. Today, political anthropology is a cross-cultural study of the institutions and relationships that distribute power in societies. Whereas legal anthropology traditionally focused on law in non-western contexts, it has become a diverse study of law and legal pluralism, the state, transnational institutions, and law-like activities of corporations. The political and legal concerns of anthropologists have both expanded and converged, providing a unique perspective on contemporary sociolegal theory and practice.

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. 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 Cultural Resource Management 3 ch (3S) (LE) (W) (EL)

Explore the applied field of Cultural Resource Management (CRM), and its goals of identifying, documenting, and managing impacts on cultural resources, including archaeological materials and other forms of tangible and intangible cultural heritage. Learn about national, provincial, and international legal and ethical frameworks that regulate the work of CRM professionals. Develop the practical skills needed in professional roles and forms of reporting.

ANTH4313 Archaeology, Heritage, and Public(s) (O) 3 ch (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 resource management.

ANTH4502 Issues in Medical Anthropology (A) 3 ch (3S) (W) (EL)

Medical anthropology plays an important role in global health. Examine the theoretical and methodological perspectives in global health and how these shape research practices in public health policies including designing effective intervention strategies in international settings. Study Indigenous health issues from a global perspective and the impact of development on population health. Emphasis is placed on examining the ethical and practical issues in conducting research in non-Western societies and how an anthropological approach can contribute to a better understanding of health and illness and develop interdisciplinary perspectives in global health research.

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.

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: Anthropological Applications (O) 3 ch (3L) (W)

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, Sexuality, and Health (A) 3 ch (3S) (W)

Examine the gender dimension of health and disease and address the articulation of gender roles and ideologies with health status, the organization of health care, and health policies in a cross-cultural perspective. Utilize the Gender-based Analysis Plus (GBA+) approach for examining how diverse groups of women, men, and non-binary people experience health policies, programs and initiatives. The "plus" in GBA+ shows that GBA goes beyond biological (sex) and socio-cultural (gender) differences, including how racism and other social injustices and their intersections with gender and sexuality compound the challenges faced by many marginalized groups.

ANTH5001 Anthropology Honours Seminar 3 ch (3S) (W) (EL)

Students explore the research process through conducting an individual research project in anthropology, developed in conjunction with the instructor. In addition, students engage in professional development and experiential opportunities. *Prerequisite:* 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

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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.

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.

ARTS1013 Arts First: Justice in Humanities and Social Sciences 3 ch (2C 1T) (W)

Examines foundational and contemporary conceptions of justice within the humanities and social sciences. A skills development lab component provides active learning opportunities. Registration 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 1013.

ARTS1023 Arts First: Climate & Environment in Humanities and Social Sciences 3 ch (2C 1T) (W)

Examines climate change and broader environmental issues from the perspective of the humanities and social sciences. A skills development lab component provides active learning opportunities. Registration 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 1023.

ARTS 2001 Mental Health Literacy 3 ch (3C)

Introduces students to mental health literacy, taking an intersectional approach and considers multiple and diverse perspectives on mental health and well-being. Throughout the course, students will build a variety of skills through reading, writing assignments, and by engaging in experiential learning opportunities. This course is not intended to be a substitute for counselling and does not qualify students to act as mental health professionals upon completion.

ARTS3000 Faculty of Arts Internship 6 ch (LE) (EL)

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 ARTS 3002.

ARTS3001 Faculty of Arts Internship 3 ch (LE) (EL)

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) (EL)

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) (EL)

Links critical reflection 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 3ch 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 speciation; 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 Introduction to Biology on a Changing Planet 3 ch (3C)

Introduces students to the biodiversity, ecology, and evolution of life on Earth through exploration of the ever-changing nature of Earth's ecosystems. Topics are chosen to help students understand 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 Introduction to Biology on a Small Scale 3 ch (3C)

Introduces students to biological concepts that apply to everyday life. Topics are 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 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 Introduction to Biology on a Small Scale – Online 3 ch (3C)

Introduces students to biological concepts that apply to everyday life. Topics are 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 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 enrollment; 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) (EL)

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 also 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 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 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.

SECTION H: FREDERICTON COURSES

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.)

BIOL2372 Paleontology (Cross-Listed: ESCI 2272) 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 2272 and

BIOL 2372. *Prerequisites:* One pairing of either ESCI 1001 and ESCI 1006/ESCI 1026/ESCI 1036, or ESCI 1012 and ESCI 1017.

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 Practical Nurses 3 ch (3C1T)

Builds on the knowledge gained in the Practical Nurses program and will enhance the understanding of human physiology, and pathophysiological mechanisms and disease processes. The course will build on the student's previous clinical or classroom experience. It 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 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 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 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 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. *Prerequisites:* 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) (EL)

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 developmental 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.

BIOL3241 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 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.

SECTION H: FREDERICTON COURSES

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.

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. Enrolment 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.

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 as lumber, potatoes and brewing. Course evaluation will focus on student projects/presentations of a chosen relevant topic. *Prerequisites:* One BIOL 2063 or FOR 2425, or equivalent, or 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.

BIOL3581 Molecular and Genomic Techniques in 4 ch (1C 4L)

Environmental Microbiology

Students will be trained in the use of diverse laboratory and computational approaches for the study of microbial organisms in the environment. The techniques include microscopy and basic identification, preparation of culture media, establishment of cell cultures from environmental samples, use of diverse DNA extraction methods, gel electrophoresis, PCR applications, generation of metabarcoding and genomic data (high-throughput DNA sequencing), and the use of computation tools for sequence data analysis. At the end of the course, students will have a broad and integrative view of contemporary tools widely used to study microbial diversity and abundance. *Prerequisites:* BIOL 2013 or BIOL 2053 and BIOL 2103, BIOL 2023, BIOL 2028, BIOL 2063, BIOL 2068.

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 enrolment. *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, discussion 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/L)

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 Physiology 3 ch (3C/L) (LE) (W)

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 and STAT 2264 or equivalent; 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) (EL)

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 Honours Coordinator in the Department 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) (EL)

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) (EL)

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 enrolment. *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) (EL)

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 Marine Plants 5 ch (C/L/S) (LE) (EL)

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

SECTION H: FREDERICTON COURSES

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 program. *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 (O) 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 Paleocology 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 learn 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 isotope 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) (EL)

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: Computational Analysis of Genes and Genomes (O) 4 ch (2C 4L) (LE)

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.

BIOL4641 Coastal Marine Ecology 5 ch (C/L/S) (LE) (EL)

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.

BIOL4652 Introduction to Oceanography and Paleooceanography (Cross-Listed: ESCI 4282) (A) 4 ch (3C 2L)

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 paleooceanography (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.). Credit may not be obtained for both ESCI 4282 and BIOL 4652. *Prerequisites:* One pairing of either ESCI 1001 and ESCI 1006/ESCI 1026/ESCI 1036, or ESCI 1012 and ESCI 1017; or BIOL 1001/BIOL 1009, BIOL 1006, BIOL 1012/BIOL 1019, BIOL 1017; (ESCI 2272 recommended).

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 intercession 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) (EL)

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) (EL)

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 Biology and Forestry 3 ch (3C 1T)

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). 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.

SECTION H: FREDERICTON COURSES

Faculty of Management

This section contains course descriptions for students entering the program after September 2021. For students who entered the program prior to September 2021, please contact the Faculty of Management or see the 2020-2021 Web version of the Undergraduate Calendar for Management course descriptions.

Course Numbering System

The Faculty of Management 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 study

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	

a. The third and fourth digits differentiate courses in the same field.

See beginning of Section H for abbreviations, course numbers and coding.

ADM1165 Business Communications I 3 ch (3C) (EL)

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) (EL)

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) (EL)

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 competencies 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 organizational change. Credit will not be given for both this course and ADM 2513.

ADM2166 Business Communications II 3 ch (3C) (EL)

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) (EL)

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) (EL)

Covers the application of theory and analytical tools from the marketing management perspective. Focuses upon analysis and solutions 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.

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 differences 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 exist 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) (EL)

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.

SECTION H: FREDERICTON COURSES

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.

ADM3628 Advanced Statistics for Finance (Cross-Listed: ECON 3628) 3 ch

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) (EL)

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 credit hours including ADM 2315 and 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.

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.

ADM4190 Venture Assessment 6 ch (6C) (EL)

Focuses on the venture assessment process from the perspective of early stage investors. The skills students learn will be valuable within investment firms and in various other settings. It would be valuable 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.

SECTION H: FREDERICTON COURSES

ADM4191 Professional Development 0 ch (EL)
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 Iliad 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) (EL)
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 modulated for completion at appropriate points prior to or during the respective courses that need them. Integration 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 (EL)
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) (EL)
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) (EL)
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.

ADM4198 Business Practicum 3 ch (LE) (W) EL
Focus on one or more experiential learning engagements which will include approved work placements that involve practice of 60 hours or more in one or more management disciplines (leadership, marketing, finance, etc.). Academic assignments related to the practicum placement(s) will be evaluated for academic assessment. Students must have completed Year 2 of the BBA program in good standing or have instructor permission to register in this course. This course is graded on a Credit/No Credit (CR/NCR) basis.

ADM4199 Consulting Practicum 3 ch (3C) (EL)
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) (EL)
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) (EL)
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.

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) (EL)

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) (EL)

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) (EL)

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.

ADM4451 Student Investment Fund I 3 ch (LE) (W) (EL)

Develops skills in actual financial investment process and portfolio management. Guided by faculty advisors, to manage a \$8,000,000+ pension portfolio within the investment policies and procedures of the New Brunswick Investment Management Corporation (NBIMC). Will require 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. Students are assigned as analysts on a specific business sector team to develop equity research and communication skills. Open only to BBA students. Eligible candidates are required to complete an application form and go through an interview. *Prerequisite:* Econ 1013, Econ 1023, ADM 1213, ADM 2223, ADM 3413; *Co-Requirement:* ADM 3415, ADM 4425

ADM4452 Student Investment Fund II 3 ch (LE) (W) (EL)

Develops experiential learning of the actual financial investment process and portfolio management. Guided by faculty advisors, to manage a \$8,000,000+ pension portfolio within the investment policies and procedures of the New Brunswick Investment Management Corporation (NBIMC). 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. Students are assigned as portfolio managers leading a specific sector team and develop portfolio management skills. Eligible candidates are required to complete an application form and go through an interview. Must have completed ADM 4451. *Prerequisite:* ADM 4451, 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

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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) (EL)

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 applications. 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.

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 Human Resources Management (O) 3 ch (3C) (W)

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.

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) (EL)

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 [Section H](#) 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. A mark of CR/NCR is awarded. **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) (EL)

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*) (EL)

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.

SECTION H: FREDERICTON COURSES

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) (EL)

Experiments in unit operations. Emphasis on interpretation of experimental data, group dynamics, experimental design, and report writing. Students will work under limited supervision. *Prerequisite:* CHE 2703.

CHE3434 Chemical Engineering Laboratory III 3 ch (1C 3L) (W) (EL)

Experiments in unit operations. Emphasis on interpretation of experimental data, group dynamics, safety issues, and report writing. Students will work under minimal supervision. *Prerequisite:* CHE 3304.

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 reactors (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) (EL)

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) (EL)

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) (EL)

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) (EL)

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.

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CHEM1006 General Chemistry Laboratory I 2 ch (3L)

Topics include: measurements and statistics, inorganic and organic synthesis, qualitative and quantitative analysis, computer modelling, 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 3 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 Chemistry of Energy Materials 3 ch (3C)

Theory and materials related to energy storage and conversion, including supercapacitors, batteries, solar cells, fuel cells, and more. *Prerequisites:* CHEM 2201 and CHEM 2601.

CHEM2237 Inorganic Chemistry Laboratory I 3 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. *Co-requisites:* CHEM 2401 or CHEM 2421.

CHEM2401 Introductory Organic Chemistry for Non-Chemistry Majors 3 ch (3C)

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 cannot be obtained for both CHEM 2401 and CHEM 2421. *Prerequisites:* CHEM 1001 or CHEM 1012 or CHEM 1982.

CHEM2416 Organic Chemistry Laboratory I 3 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: Structure and Properties 3 ch (3C)

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 1001 or 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) (EL)

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) (EL)

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 3 ch (3L) (EL)

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, organometallic, chemistry and catalysis. Introduction to biological inorganic chemistry. *Prerequisite:* CHEM 2222.

CHEM3236 Inorganic Chemistry Laboratory II 3 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 Mechanisms and Synthetics 3 ch (3C)

The mechanistic aspects of organic reactivity and the application of selected reactions to synthesis of organic molecules. *Prerequisites:* CHEM 2422.

CHEM3422 Advanced Organic Chemistry Reactions and Mechanisms (O) 3 ch (3C)

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 Stereochemistry (O) 3 ch (3C)

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 3 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 non-Chemistry Majors 2 ch (3L)

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 Chemical Engineers 2 ch (3L)

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 Chemical Engineers (*) 1 ch (3L)

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) (EL)

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)

Periodic 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 3 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 6 ch (3C 3L)

Introduction to computer-assisted drug design. Course topics include: intermolecular interactions, conformational analysis, molecular mechanics, molecular dynamics, docking, pharmacophores, protein modeling, QSAR, and cheminformatics. Course includes lectures and a weekly computer laboratory component. *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.

SECTION H: FREDERICTON COURSES

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 3 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.

CHEM4663 Introduction to Materials Chemistry (A) 4 ch (3C 1L)

The synthesis, characterization, and properties of materials including metals, semiconductors, polymers, and ceramics. Connection of the properties (e.g., optical, electrical, magnetic, thermal, and mechanical) of materials to crystal structures and chemical composition with emphasis on doping to design efficient materials for renewable energy applications. The lab component will introduce the art of glass blowing, solid-state synthesis, and crystal structure determination using X-ray crystallography. At the end of this course, students will be able to synthesize and characterize solid-state materials, determine the crystal structure using powder X-ray diffractometry, connect the physical properties of materials to the crystallographic structures and chemical composition, delineate the origins of color, differentiate different electronic and magnetic systems, understand stress-strain curves, and read phase diagrams. Furthermore, students will be able to work with high-temperature torches to prepare quartz tubes. *Prerequisite:* CHEM 2002 and CHEM 2601 or by permission of the instructor.

CHEM4886 Physical Chemistry Laboratory for Chemical Engineers 2 ch (3L)

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.

CHINESE

Courses in Chinese 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.

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 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.

CIVIL ENGINEERING

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 [Section H](#) 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) (EL)

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)

Learn about the design of steel structures using limit states design. Topics include an introduction to the National Building Code requirements for structural design, steel as building material, tension members, compression members, flexural members, steel members under combined loading, fasteners, and the influence of fasteners on the capacity of steel members. Structural analysis and design software is introduced in weekly labs. *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) (EL)

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 analysis 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) (EL)

Design of a system or process to meet desired needs within identified constraints and communication of the result to a broader audience. Design topics covered 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) (EL)

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.

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. *Prerequisites:* CE 3053

CE5063 Structural Steel Design II 4 ch (3C 2L)

Learn about structural steel systems, connections, and advanced topics. Topics include gravity framing, concentrically braced frames, moment resisting frames, Gerber framing, and bridge plate girders. Connection design for each framing system is introduced. Structural analysis and design software is incorporated in weekly labs and an open-ended steel-framed building design project. *Prerequisites:* CE 3053, CE 3063.

CE5083 Structural Wood Design 4 ch (3C 2L)

Introduction to wood as a structural material and structural principles involved in wood design. Students will explore the design of individual elements (beams, columns) and timber structural systems (mass timber, hybrid systems) in a project-based approach. Light frame and mass timber lateral force resisting systems, and concepts relating to life cycle analysis will be introduced. *Prerequisite:* CE 3063, CE3513.

CE5142 Foundation Engineering II 4 ch (3C 2L)

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, as well as a computational lab of computer applications in Foundation Engineering. Credit will not be given for both CE 5132 and CE 5142. *Prerequisites:* 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 Introduction to Pavement Engineering 4 ch (3C 3L)

A study of the design, construction, maintenance, and rehabilitation of highway pavements. Design of rigid and flexible pavements and pavement overlays. Evaluation of pavement construction, maintenance, and rehabilitation methods and decisions using a life cycle costing approach. Laboratory sessions examine asphalt properties, design and testing of bituminous mixtures, and quality control techniques using industry standard test procedures. *Prerequisite:* CE 2113, CE 3201, CE 3963.

SECTION H: FREDERICTON COURSES

CE5222 Traffic Engineering 4 ch (3C 3L) (EL)

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.

CE5242 Transportation Field School 4 ch (3C 2L) (W) (EL)

Prepare for an international travel experience characterized by the use of multimodal transportation systems and site visits, culminating with a 7 - 10 day collaborative project with a partner university immediately following the exam period. Complete a technical report on a transportation topic and a field report documenting the field school experience. Priority is given to those registered in or who have taken CE5203. Students are responsible for their own travel and accommodation expenses. *Prerequisite:* CE2913, CE3201

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.

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.

CE5613 Construction: Financial and Industry Issues 4 ch (3C 1T) (EL)

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) using simulation models and case studies. *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.

CE5643 Construction: Advanced Technologies 4 ch (3C 2L) (EL)

Learn about tools and techniques required in modern construction engineering and management (CEM). Emphasis is on the use of analytical approaches including construction simulation and optimization, alongside design and visualization tools such as Building Information Modeling (BIM) and Virtual Design and Construction (VDC) to support CEM decision-making. Credit will not be given for both CE 5633 and CE 5643. *Prerequisite:* CE 3603.

CE5721 Ecohydraulics 4 ch (3C 2L) (EL)

Covers important topics in urban engineering hydrology, including: quantification of hydrological processes relevant to watershed water management, prediction of surface runoff and stream response,

mitigation of impacts of urbanization and climate change for flood and drought decision flows. *Prerequisite:* CE 3713.

CE5753 Engineering Hydrogeology (Cross-Listed: GE 5753) 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. Credit cannot be obtained for both CE 5753 and GE 5753.

CE5913 Special Studies in Civil Engineering I 1 ch (EL)

(See description for CE 5933).

CE5923 Special Studies in Civil Engineering II 2 ch (EL)

(See description for CE 5933).

CE5933 Special Studies in Civil Engineering III 3 ch (EL)

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 (EL)

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.

CLAS1043 Mesopotamia and Egypt (O) 3 ch (3C)

Explore the rich history of two ancient civilizations situated on famous rivers: the Tigris and Euphrates and the Nile. From Pyramids and Ziggurats to tombs and temples, examine the rich archaeological history of the Ancient Near East. Engage with primary source texts excavated from modern day Egypt and Iraq.

CLAS1323 Discovering Ancient Civilizations 3 ch (3C) (W)

Investigate the history of ancient civilizations across the wider Mediterranean world from Greece and Rome to Egypt and Mesopotamia. Explore how archaeology and text together construct a full picture of the lives of ancient people in different civilizations. Experiment with hands-on activities to understand key methods using archaeological and text-based evidence.

CLAS1403 The Ancient Greeks: Gods, Heroes, Politicians and Poets 3 ch (3C) (W)

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: Gladiators and Senators, Engineers and Emperors 3 ch (3C)

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 Casear 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 Greece and Rome 3 ch (3C)

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.

CLAS2643 Rome: The Eternal City I (O) 3 ch (EL)

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 tuition.

CLAS2645 Introduction to Spectacle in Ancient Rome (A) 3 ch (3C) (EL)

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 Actium (O) 3 ch (3C) (W)

Survey Greek history from its beginnings in the Bronze Age to the battles with Rome that ended Greek hegemony in the Mediterranean world. Examine the era of the Trojan War and Mycenaean palaces, the origins of the world's first democracy, the Persian Wars, Pericles and the Athenian Golden Age, the clash of Athens and Sparta, the conquests of Alexander the Great, and the rise and fall of the Hellenistic kingdoms. Discover the enduring impact that Greek history and Greek civilization have had on the modern world.

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.

CLAS3043 The Ancient Near East (O) 3 ch (3C) (W)

Survey the civilizations of the ancient Near East from the Bronze Age to the rise of Islam. Topics include Mesopotamia, Pharaonic Egypt, Achaemenid and Sassanid Persia, Parthia, North Africa, and Early Medieval Arabia.

CLAS3103 Archaeology and the Bible (O) 3 ch (3C) (W)

Delve into the history of archaeology in the ancient Middle East and its relation to the Hebrew Bible. Explore the story of how archaeological methods were developed in Egypt and Mesopotamia and used to tell the stories of some of the earliest cities, the invention of agriculture, and the early peoples who inspired the stories contained within Biblical texts. Analyse archaeological and textual evidence to see how they can be combined to tell a coherent narrative or sometimes might not tell the whole story.

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.

CLAS3333 From Kingship to Democracy: The Art and Archaeology of Greece (A) 3 ch (3C) (W) (EL)

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.

CLAS3343 Archaeologies of the Roman Empire: Art, Landscapes and Memories (A) 3 ch (3C) (W) (EL)

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 amphitheatres (such as the Colosseum). Students cannot receive credit for both CLAS 2313 and CLAS 3343.

CLAS3353 Archaeology of Babylon (O) 3 ch (3C) (W)

Delve into the Hanging Gardens, the Ishtar Gate, and the mythical Tower of Babel to understand the importance of Babylon. Compare and contrast evidence from archaeological excavations and primary source texts to retell the history of Babylon over thousands of years. Recall the many kings and empires that claimed Babylon as their own from Hammurabi to Alexander the Great.

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) (EL)

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.

CLAS3423 Gilgamesh (O) 3 ch (3C) (W)

Trace the world's first epic from its earliest Sumerian version over 4,000 years ago up to modern reinterpretations. Read the text in translation and investigate the process of recovering a myth lost in the depths of time. Place the epic in its contemporary and modern context among other stories from Mesopotamia and beyond.

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.

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.

SECTION H: FREDERICTON COURSES

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].

CLAS3583 Ancient Mediterranean Warfare (O) 3 ch (3C) (W)

Survey the warfare of ancient Mediterranean cultures from the Bronze Age to Late Antiquity. In addition to tactics, strategy, and equipment, examine the interaction of warfare and society, and how different ancient Mediterranean cultures influenced, interacted with, and fought each other.

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) (EL)

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 mediaeval history of the city of Rome, through 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 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 material on site and in museums. Travel costs not included in tuition.

CLAS3673 Ancient Cities and Civilizations of Western Turkey: Myth, Cult and Ancient History (O) 3 ch (W)

A study of the 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 Greek 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: Hellenistic, Roman, and Early Christian (O) 3 ch (W)

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 Christian 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 remains, including visits to Roman cities, villa and bath complexes, museum collections in London elsewhere, and Hadrian's Wall and other military installations. Travel costs not included in tuition.

CLAS3703 Socrates and the Intellectual World of Classical Athens (O) 3 ch (3C/S) (W)

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 (O) 3 ch (3C) (W)

Explore the history of scientific thought in ancient civilizations from Greece and Rome to Mesopotamia and Egypt (and beyond). Recognize the remarkable insight these early thinkers had into the world around them. Experiment with ancient procedures and methods of science and math from primary source texts.

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.

CLAS3885 Ancient Greek Literature and its Legacies (O) 3ch (3C) (W) in English (Cross-listed: ENGL 3885)

Examine foundational texts from the major genres of Ancient Greek literature, including epic and lyric poetry, tragic and comic drama, oratory, and philosophical prose. Become familiar with canonical authors such as Homer, Sappho, Euripides, Aristophanes, Demosthenes, and Plato. Explore literary features of the texts, as well as issues of gender, sexuality, politics, ethics, and cultural contact. Develop an understanding of the legacy of Ancient Greek literature in English literature from the Renaissance to the present, including the diversity of early modern and contemporary authors who have written in English in dialogue with the Classical Greek canon (e.g., Keats, Soyinka, Walcott, Vuong). All texts will be read in English; no prior familiarity with the ancient world required.

CLAS3886 Roman Literature and its Legacies in English (O) (Cross-listed: ENGL 3886) 3 ch (3C) (W)

Examine foundational texts from the major genres of Roman literature, including epic, lyric, and satire, tragic and comic drama, oratory, philosophical prose, and the ancient novel. Become familiar with canonical authors such as Vergil, Ovid, Horace, Sulpicia, Seneca, and Cicero. Explore literary features of the texts, as well as issues of gender, sexuality, politics, ethics, and imperialism. Develop an understanding of the legacy of Roman literature in English literature from the Renaissance to the present, including the diversity of early modern and contemporary authors who have written in English in dialogue with the Classical Roman canon (e.g., Spenser, Milton, Morrison, Tempest). All texts will be read in English; no prior familiarity with the ancient world required.

CLAS3903 Ancient Drama (O) 3 ch (3C) (W)

Survey the dramatic literature and performance cultures of the ancient Mediterranean. Topics include the tragic and comic theatre of Greece and Rome, the many cross-cultural interactions reflected in those dramatic genres, and the role of drama and performance in ancient cities.

CLAS3913 Gender and Power in Ancient Greece and Rome (O) 3 ch (3C) (W)

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 femininity and masculinity in the ancient mythology and public ritual; the gendering of public and private space; licit and illicit sexual practices; love, marriage, adultery and prostitution; and gendered narratives of good and bad politicians, emperors, and those perceived to be "barbarians."

CLAS3923 Ancient Law (O) 3 ch (3C) (W)

Delve into the laws of the ancient Mediterranean and Near Eastern worlds and discover what they reveal about the structure of ancient societies. Examine texts and inscriptions including the Code of Hammurabi, the Hebrew Torah, court speeches from democratic Athens, and the Roman legal codes. Consider the legacy of ancient law codes on contemporary legal systems and concepts of crime, punishment, and justice.

CLAS3933 Golden Ages of the Ancient Mediterranean (O) 3 ch (3C) (W)

Study the great cities of the ancient Mediterranean in their periods of economic, artistic, and political flourishing. Explore the history, literature,

art, and culture of these extraordinary periods, and consider who benefitted from them and who was excluded.

CLAS3943 Ancient Spectacle (O) 3 ch (3C) (W)
Examine the importance of spectacle in the cultures of the ancient Mediterranean and Near East, from religious ritual to political oratory, tragic theatre to comic farce, gladiatorial combat to erotic mime. Work with literary and archaeological sources to explore the many spaces in the ancient world where people gathered to see and be seen. Gain an understanding of the social functions of ancient spectacles and their legacy in the contemporary world.

CLAS3953 Race and Racism in the Ancient World (O) 3 ch (3C) (W)
Study the ways that cultural, ethnic, and racial stereotypes were constructed and deployed by various ancient Mediterranean cultures. Additional areas of focus include the similarities and differences between ancient and modern forms of racial thinking, and the legacy of ancient ideas in contemporary beliefs and practices related to race.

CLAS4063 Caesar Augustus: Architect of the Roman Empire (A) 3ch (3C) (W)
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.

CLAS4403 Classics/Classical Studies Honours Capstone Course (A) 3 ch (3S) (W)
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 Mediterranean; 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.

CLAS4603 The Archaeology of Athens (O) 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.

CLAS4613 The Archaeology of Rome (O) 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.

CLAS5003 Directed Studies in Classics 3 ch (3C) (W) (EL)
A detailed study of a specific area of Classical Studies. Uses primary sources (in translation) to illuminate the chosen topic. *Prerequisite:* Permission of the instructor.

CLAS5100 Research in Ancient World Studies 6 ch (6S) (W)
Learn some of the most prevalent research methods in Ancient World Studies. The primary assignment is the production of an honours thesis making use of the research methods covered.

CLAS5103 Ancient World, Modern Issues (O) 3 ch (3S) (W)
This course explores ancient variations on an issue facing contemporary society, with special attention paid 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.

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) (EL)

(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 CSS Majors and Honours students.

CCS1023 Sex, God and War: An Introduction to Pre-Modern World Literature 3 ch (3C) (W)

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 prerequisite.

CCS1076 Food Culture in Germany (O) 3 ch (3C) (EL)

Offers insights on food as a window to German culture and explores the country's food by region and through political, cultural, and historical lenses. Students study 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 occasions, food-related inventions, media representations, influences from other cuisines, organic foods, vegetarianism and veganism.

CCS2019 Fairy tales, Folktales, Legends and Lays (A) 3 ch (3C) (EL) (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 and 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 Hameln*, *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 3 ch (3C) (W) (EL)
(Cross-Listed: MAAC 2021)

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.

SECTION H: FREDERICTON COURSES

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) (CO)**

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: 3 ch (3C) **Dance In The Global Village (O)**

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-dance, 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.

CCS2029 Becoming: Young Adult Fiction 3 ch (3C) (W) (EL) **and Popular Culture**

Explore stories of becoming and survival in Young Adult fiction and popular culture. Understand these narratives in light of their social commentaries, cultural-historical contexts, and variety of forms. Selected German and North American classics, contemporary texts, and films will be examined in a comparative context to illuminate the specific changing ways of negotiating identity, coming of age, gender, race, and diversity in this genre.

CCS 2666 Celebrity and Mass Media in 3 ch (3C) (W) (EL) **Latin America (O) (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. There are no prerequisites for this course. Students who have taken CCS 3555 may not obtain credit for CCS 2666 or MAAC 2666.

CCS3003 Contemporary Issues in Comparative 3 ch (3S) (W) **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.

CCS3022 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) (EL)

This course aims to explore the Berlin's multi-faceted 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, Süsskind, 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 recent 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 Caribbean 3 ch (3C)
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.

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 enroll in MAAC 3065. Students who have taken WLCS 3065 may not attain credit for CCS 3065.

CCS3066 Trauma and Seduction: Early German (A) 3 ch (3C) (W)
Cinema (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 1900 to 3 ch
(3C) (W)

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 3 ch (3C) (W) (EL)
Media (O) (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, 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. *Prerequisites:* Open to students who have completed at least 30ch 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 German Culture 3 ch (W)

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, art, interior design), film, music and theatre festivals. They discover and critically reflect on official and unofficial forms of knowledge distribution, cultural programming and mediation. The course also challenges 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) (EL)
(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.

SECTION H: FREDERICTON COURSES

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 the Oceans (Cross-Listed: MUS 3123) 3 ch (3C) (W) (EL)

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) (Cross-Listed: MAAC 3211) 3 ch (W)

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 cellphilim 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 environment 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.

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) (Cross-Listed MAAC/FILM 3455)

Provides students with a background in Latin American cinema, emphasizing the most productive centres such as Mexico, Cuba, Brazil, and Argentina. Equal emphasis is placed on both cinematographic and thematic analysis of films studied. Cultural and historical context will be provided. Language of instruction is English. Students taking this course to fulfill a Major or Honours requirement in Spanish must submit required work in Spanish. Students who have taken WLCS 3455, or SPAN 3455 may not attain credit for CCS 3455. Prerequisites: 30 credit hours of university courses

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 Bollain. 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) (EL)

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) (EL) (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) (EL) (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 for non-violence that may include selected writings of the 14th Dalai Lama, Cesar Chavez and Wangari Maathai in their religious, cultural, social and historical backgrounds. Prerequisites: 30 ch or permission of the instructor.

CCS3668 Women, Creativity, and Nonviolence 3 ch (3C) (W) (EL) **Across Cultures I (Cross-Listed: SOCI 3668)**

Examine the creative contributions women make to the resolution of conflicts through nonviolent means. Discuss 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. Focus on the creative impact of women and their success in building peace through nonviolent means, and study how and why gender matters in the contemporary world. Note: Credit can only be obtained for one of SOCI 3668 and CCS 3668. Prerequisite: Open to students who have completed 30 ch of courses or by the permission of the instructor.

CCS3669 Women, Creativity, and Nonviolence 3 ch (3C) (W) (EL) **Across Cultures II (Cross-Listed: SOCI 3668)**

Explore the contributions, activism, and methods of outstanding women who have had an impact on creating more peaceful communities and

nations through their involvement in the arts, society, and culture. From Liberia (Leymala Gbowee) to Yemen (Tawakkul Karman) and Kashmir (Bracha Ettinger), examine the theme of peace from different worldviews. Prerequisite: Open to students who have completed 30 ch of courses or by permission of the instructor. Note: Credit can only be obtained for one of SOCI 3669 and CCS 3669.

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 (EL)
(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 Zamyatin, 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 MUS 3799 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) (EL)

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 Senior Seminar 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:

SECTION H: FREDERICTON COURSES

60 ch of courses including MAAC/CCS 2021, or permission of the instructor. may only obtain credit for one of MAAC 4021 or MAAC 5021.

CCS4056 Senior Seminar in Queer Futurities (A) 3 ch (3S) (W) (Cross-listed in MAAC 4056)

Examine the literature on queer futurities from a variety of perspectives including queer ecologies, disability studies, and critical race theory. Explore queer world building, collective knowledge, and community care practices. Topics and theories may include: Afrofuturism, Indigenous futurism, feminist utopias, queer temporalities, queer epistemologies, and queer joy. Prerequisite: 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor.

CCS4062 Contemporary Spanish and Latin American Women Artists (A) 3 ch (3C)

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) (EL)

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.

CCS 5021 Honours Seminar in Popular Culture (A) 3 ch (3S) [W] (Cross-listed MAAC5021)

Seminar focusing on theoretical approaches to the study of popular culture. Topics and theories covered may rotate from year to year. Prerequisites: 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor. CCS5021 is normally open only to Honours students.

CCS5056 Honours Seminar in Queer Futurities (A) 3 ch (3S) [W] (Cross-listed MAAC5056)

Examine the literature on queer futurities from a variety of perspectives including queer ecologies, disability studies, and critical race theory. Explore queer world building, collective knowledge, and community care practices. Topics and theories may include: Afrofuturism, Indigenous futurism, feminist utopias, queer temporalities, queer epistemologies, and queer joy. Prerequisite: 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor. CCS5056 is normally open only to Honours students.

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; 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, 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 Introduction to Software Engineering 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) (EL)

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 a small but complete

game during the course and reflect upon the process. *Prerequisite:* CS 2043 or CS 2263 or ECE 4403.

CS2063 Introduction to Mobile Application Development 4 ch (1.5C 3L) (P) (EL)

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 create and test a small but complete mobile application for a selected currently prominent platform and reflect upon the process. *Prerequisite:* CS 2043 or CS 2263 or ECE 4403.

CS2213 Introduction to Applied Internet of Things 3 ch (1C 2T) (EL)

Introduces the Internet of things, circuits, and programming using MicroPython to enable students to build an IoT device using commodity sensors connected to a microcontroller. Introduces IoT wireless protocols (e.g., LoRa), data visualization, data management using a database, and if time permits, basics of 3D printing. Students will build a smart device connected to the Internet and reflect upon the process. *Prerequisites:* CS 1003, CS 1063, or CS 1073. **NOTE:** As the core materials for the course, students will need to purchase their own sensors and microcontroller.

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)

Provides fundamentals of 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. **NOTE:** Credit cannot be obtained for both CS 2545 and STAT 1001.

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 types 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.

CS3103 Programming on the Web 3 ch (2C 1L) (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 technologies 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

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interfaces. At least one of the major Unix shell languages will be covered.
Prerequisite: CS 2263 or (CS 1023 and ECE 3321).

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.

CS3735 Introduction to Machine Learning 3 ch (3C) [P]

Introduces the principles and algorithms of machine learning. Topics include (1) traditional machine learning, such as regressions, decision trees and ensemble learning, artificial neural networks, Bayesian learning, support vector machines, instance-based learning, unsupervised learning; (2) deep learning: such as recurrent networks, convolutional neural networks, deep belief networks, deep generative models. Students are expected to implement various machine learning models and conduct experiments on real world datasets. *Prerequisite:* CS 2383, and (STAT 2593 or STAT 3083).

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 2L*)

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) (EL)

Introduces current topics in the field of Human-Computer Interaction to provide a deeper understanding of human needs and capabilities in the context of 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. Students will develop and evaluate an interactive system and reflect upon the process using concepts learned in class.
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 Cybersecurity Essentials 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. The course will also examine zero trust concepts, 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, ethical hacking; database security issues and solutions, and administering security. 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) (EL)

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)

Introduces to intelligent agent design, problem solving using search techniques, the use of mathematical logic for knowledge representation and reasoning, decision making under uncertainty. *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)

Introduces 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 vector semantics and neural language models, as well as applications such as document classification, dialog systems, 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 2333 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 Networks Modeling 4 ch (3C 2L*)

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) (EL)

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. Normally offered as an eight month course over fall and winter terms, and available over the summer term as a four 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 (Cross-Listed: SOCI 1603) 3 ch (W)

Explore the subject matter of criminology and its relationship to other academic disciplines. Examine concepts and terms commonly used in criminology, the relationship between theory and practice, the history and evolution of criminological thought, and methods of investigation into criminal behaviour. The practical applications of criminology and the foundations of a modern criminal justice policy are also discussed. **NOTE:** Credit can be obtained for only one of CRIM 1603, SOCI 1603 and SOCI 3603.

CRIM2009 Human Trafficking (Cross-Listed: SOCI 2009, FVI 2009) 3 ch

Situate human trafficking as a crime stemming from gender-based violence and intersecting structural inequalities. Critically reflect on positionality and experiences. Identify stereotypes as well as victim-blaming in media representations and public discourses. Learn about and assess state and community responses to human trafficking. Typically offered Online. **NOTE:** Students may obtain credit for only one of SOCI 2009, CRIM2009, or FVI 2009.

CRIM2015 Introduction to the Canadian Criminal Justice System (Cross-Listed: SOCI 2015) 3 ch (W)

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

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assault, spousal battery, and child abuse; and robbery. **NOTE:** Credit can only be obtained for one of CRIM 2563, SOCI 1563, 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 behaviours 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 (Cross-Listed: SOCI 2663) 3 ch (W)

Provides an opportunity to explore different forms of victimization in the Canadian context, examine 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.

CRIM3383 Punishment and Prisons (Cross-Listed: SOCI 3383) 3 ch

Explore theories of punishment, the history of prisons, and the rise of risk management. Critically examine patterns and experiences of punishment and their intersections with class, gender, racism, and colonialism. Consider the social, political, and economic effects of institutionalized and community-based punishment. With a focus on the Canadian context, examine contemporary issues and topics such as abolitionism, the school-to-prison pipeline, and privatization. *Recommended:* 3 ch in Sociology or Criminology and Criminal Justice. **Note:** Credit can only be obtained for one of CRIM3383 or SOCI3383.

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 (Cross-Listed: SOCI 3613) 3 ch (W)

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 (Cross-Listed: FVI 3634 and SOCI 3634) 3 ch (W)

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 (Cross-Listed: SOCI 4301) 3 ch (W)

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 (Cross-Listed: SOCI 4337) 3 ch (W)

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 4338 Family Law and Family Violence (Cross-listed: SOCI/FVI 4338) 3 ch (W)

Examine the challenges faced by victims of family violence in family law processes, the protections in place for victims of family violence, and the options available for resolving legal disputes when family violence is present. Consider the unique needs of vulnerable groups and the importance of collaborative approaches to safety for survivors of family violence. Offered online only across all course codes. Prerequisite: 3ch in Family Violence Issues, Sociology, or Criminology. **NOTE:** Students may obtain credit for only one of FVI4338, CRIM4338 or SOCI4338.

CRIM 4339 Intersecting Violences: Global Perspectives (Cross-listed: SOCI/FVI 4339) 3 ch (W)

Explore how gender, power, and violence are linked. Discover root causes and social factors that contribute to gender-based violence. Analyze macro-level power constructs such as colonization, systemic racism, and misogyny alongside micro-level expressions of interpersonal violence. Learn about community-based efforts to end cycles of violence, and implement dynamic approaches to individual and community healing. Offered online only across all course codes. Prerequisite: 3ch in Family Violence Issues, Sociology or Criminology. **NOTE:** Students may obtain credit for only one of FVI4339, CRIM4339, or SOCI4339.

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 for the Theatre (Cross-Listed: ENGL 2174) 3 ch (3 hours/wk)
plus practical work

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.

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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).

DRAM417 Thesis Production and Independent Project (Cross-Listed: ENGL 4170) 6ch (practical work)

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 resources. 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.

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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 Earth System Works 3 ch (3C)

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 (8 days) 3 ch (W) (EL)

Provides an inquiry-based hands-on laboratory and field investigations of the fundamentals of geoscience. Introduces the identification and interpretation of minerals, rocks, and geomorphology in the lab and in the field. Topographic maps, geologic maps, and Google Earth Pro are used to analyze and understand a variety of dynamic systems, including glaciers, geologic structures, and coastlines. Surveys geologic time and plate tectonics to gain a basic understanding of our local geologic history. Connections between people, resources, natural earth systems, and the geological evolution of Fredericton and regional areas are discussed. An alternative to ESCI 1006. Held after Winter exams. Additional fees may be levied to cover some transport costs, and students are responsible for their own accommodation in Fredericton during the field school. Limited Enrolment - priority will be assigned to students intending to major in a departmental program. *Prerequisite:* ESCI 1001.

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.

ESCI2272 Paleontology (Cross-Listed: BIOL 2372) 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.

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.

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) (EL)

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.

ESCI3292 Climate and Environmental Change Through Time (A) 4 ch (3C 2L) (W)

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 & the Environment (A) 3 ch (3C)

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 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 geochemical modeling. One Saturday field trip. *Prerequisite:* ESCI 2602 or permission of instructor.

ESCI3703 Field School (2 weeks) 5 ch (field school) (W) (EL)

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) (EL) (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 Sequences (A) 4 ch (3C 3L)

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.

ESCI4282 Introductory Oceanography and Paleooceanography (A) (Cross-Listed: BIOL 4652) 4 ch (3C 2L)

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.). Credit may not be obtained for both ESCI 4282 and BIOL 4652. *Prerequisite:* One pairing of either ESCI 1001 and ESCI 1006/ESCI 1026/ESCI 1035, or ESCI 1012 and ESCI 1017; or either BIOL 100/BIOL 1009, BIOL 1006, BIOL 1012/BIOL 1019, BIOL 1017; (ESCI 2272 recommended).

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

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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. *Pre- or co-requisite:* 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) (EL)

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: Critical Perspectives 3 ch (3C) (W)

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: Critical Perspectives 3 ch (3C) (W)

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) (EL)

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 economies. 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. *Prerequisites:* 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) (EL)

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 ECON 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: Principles and Practice (O) 3 ch (3C)

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: Principles and Practice (O) 3 ch

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) (EL)

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 Canadian Economy 3 ch (3C) (W) (EL)

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 ECON 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 of 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 (Cross-Listed: ADM 3628) 3 ch (3C)

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. *Prerequisite:* 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.

SECTION H: FREDERICTON COURSES

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) (EL)

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 students 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 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 ECON 1023 or ECON 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) (EL)

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 at 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)

Discuss and analyze the health economics literature. A set of topics is selected by the instructor for consideration. Selected topics may 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.

Prerequisites: ECON 4013 and ECON 4625 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) (EL)

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) (EL)

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.

ED3020 BEd in Early Childhood Education Practicum 6 ch (EL)

School-based practicum component of the Bachelor of Education in Early Childhood Education involves a six-week term in K-2 in Year 3. Graded on a credit/no credit (CR/NCR) basis.

ED3021 Human Development and Learning: An Overview 3 ch (3C) (W) (EL)

Explores developmental perspectives on human growth and learning.

ED3022 First Nations Epistemology (Ways of Knowing) 3 ch (3C) (W) (EL) (Cross-Listed: INDG 4686)

Development of personal and social identity among children in First Nations communities. Implications for classroom practice. *Students may receive credit for ED 3022: First Nations Epistemology, ABRG 4686: Wabanaki Worldviews, or INDG 4686: Wabanaki Worldviews, but only one

ED3031 The Education of Exceptional Learners 3 ch (W) (EL)

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) (EL)

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)

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) (EL)

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. Graded on a credit/no credit (CR/NCR) basis.

ED3044 History of Childhood 3 ch (W)

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.

SECTION H: FREDERICTON COURSES

ED3051 School Law and Organization 3 ch (W) (EL)

An overview of the legal, organizational, financial and professional aspects of schools and school systems.

ED3053 Wabanaki Schools in New Brunswick 3 ch (W) (EL)

Schools in Wabanaki communities are governed differently than provincial schools. The course will explore the governance structures of New Brunswick Wabanaki communities, community schools, and their relationships with Federal and Provincial governments.

ED3054 Wabanaki Culture Across the Curriculum 3 ch (W) (EL)

Students will learn to integrate Wabanaki languages, culture, worldviews, and histories across all school curricular areas through hands-on, place-based learning opportunities with Elders and knowledge keepers

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) (EL)

Examines concepts and inter-relationships among nutrition, exercise, and well-being within educational contexts.

ED3211 Introduction to Art and Creative Education 3 ch (W) (EL)

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) (EL)

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) (EL)

The study of number relationships and approaches to developing number sense in children and adults.

ED3416 Developing Geometrical Concepts 3 ch (W) (EL)

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) (EL)

Overview of physical education programs in elementary schools. Program planning, practical work.

ED3478 Health and Physical Education in the Elementary School 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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 18 ch (EL)

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. Graded on a credit/no credit (CR/NCR) basis. *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.

ED4021 BEd in Early Childhood Education Practicum 3 ch (EL)

School-based practicum component of the Bachelor of Education in Early Childhood Education involves a three-week term in K-2 in Year 4. Graded on a credit/no credit (CR/NCR) basis.

ED4031 Towards Diversity in the Classroom 3 ch (W) (EL)

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.

ED4054 Research in Early Childhood Studies 3 ch (W) (EL)

Investigates 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.

ED4089 Gifted Education: Introduction 3 ch (W) (EL)

The identification, development and approach to the gifted and talented are examined in terms of their intellectual, social and emotional characteristics.

ED4100 Wabanaki Bed Practicum I 9 ch (EL)

Introductory practicum including first nine 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. *Prerequisite:* Only students who have been officially admitted to the WBE (4-Year, Elementary) may register for ED 4100. Students are required to remain in good academic standing in their courses and maintain respectful, ethical relationships with colleagues, peers, and instructors in order to enroll in ED 4100 and proceed to their practicum placement.

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) (EL)

Students will normally be limited to 6 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

ED4200 Wabanaki Bed Practicum II 9 ch (EL)

Advanced practicum including the second nine weeks of school and classroom experience. Additional regulations are included in the Education General Regulations section under Field Experiences Practicum (Student teaching) in Section G of the Calendar. *Prerequisite:* Only students who have been officially admitted to the WBE (4-Year, Elementary) may register for ED 4200. Students are required to remain in good academic standing in their courses and maintain respectful, ethical relationships with colleagues, peers, and instructors in order to enrol in ED 4200 and proceed to their practicum placement.

ED4361 Multi Modal Literacies in Early Childhood Education 3 ch (W) (EL)

Investigates symbols and tools of digital literacies, play, math, art, music and print.

ED4363 Children's Literature Singing, Poetry and Performance 3 ch (W) (EL)

Introduction of the multi-modal world of children's 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) (EL)

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) (EL)

In this course, we will unpack complex understandings of what it means for educators to embrace equitable practices in the interests of 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 litt  rat  e    l'  l  mentaire I 3 ch (W) (EL)

Dans ce cours, vous aurez l'occasion de vous familiariser avec les principes et les pratiques de la litt  rat  e en fran  ais seconde    l'  l  mentaire. Vous explorez l'approche de la litt  rat  e   quilibr  e, les pratiques exemplaires et les strat  gies qui favorisent l'enseignement du fran  ais et l'enseignement des mati  res en fran  ais. * 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 litt  rat  e    l'  l  mentaire II 3 ch (3C) (W) (EL)

Dans ce cours, vous aurez l'occasion d'approfondir vos connaissances de la p  dagogie de la litt  rat  e en fran  ais langue seconde    l'  l  mentaire. Vous aurez l'occasion de d  velopper et d'essayer des pratiques et des strat  gies qui favorisent l'enseignement et l'  valuation du fran  ais dans divers programmes et l'int  gration de la litt  rat  e dans l'enseignement des mati  res 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 and Science 3 ch (W)

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) (EL)

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) (EL)

Teaching methods, learning strategies, program planning, with emphasis on a particular learning level.

ED4688 Teaching First Nations Children's Literature 3 ch (W) (EL)

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) (EL)

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)

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.

ED5001 Teaching and Learning Theories I 2 ch (W) (EL)

An introduction to 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 the classroom and reflect on that experience in seminars. Graded on a credit/no credit (CR/NCR) basis.

ED5002 Teaching and Learning Theories II 2 ch (W) (EL)

A continuation of 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 the classroom and reflect on that experience in seminars. Graded on a credit/no credit (CR/NCR) basis.

ED5003 Teaching and Learning Theories III 2 ch (W) (EL)

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. Graded on a credit/no credit (CR/NCR) basis.

ED5013 Special Topics in Education 3 ch (W) (EL)

In consultation with faculty advisor. (Intended for students in the DAUS.)

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) (EL)

In consultation with faculty advisor. (Intended for students in the DAUS.)

ED5035 Inclusionary Practices 3 ch (3C) (W) (EL)

Enhances 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 a 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) (EL)

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.

SECTION H: FREDERICTON COURSES

ED5050 Practicum 12 ch (EL)

School-based experience component of the 10-month B.Ed. involves an observation practicum during K-12 students' first week of classes in September, a seven-week Intermediate Practicum in the fall term, and an eight-week Advanced Practicum during the winter term. Graded on a CR/NCR basis. *Co-requisite:* Students are required to be in good academic standing and maintain respectful, ethical relationships with colleagues, peers, and instructors to proceed to their practicum placement and remain enrolled in ED 5050.

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) (EL)

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) (EL)

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.

ED5067 Comprehensive Sex Education Methods 3 ch (W) (EL)

Students will explore research-informed best practices in comprehensive sex education in early childhood, primary, middle, and secondary school contexts. Students will critically engage with research-informed strategies, resources, pedagogies, and approaches to support school-based comprehensive sex education for young people in New Brunswick.

ED5070 Cultural Contexts of Education 6 ch (W) (EL)

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) (EL)

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) (EL)

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.

ED5075 History of Education 3 ch (W) (EL)

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) (EL)

Examines 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) (EL)

Provides 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 (EL)

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) (EL)

Concepts, definitions and terminology. A preventive approach.

ED5096 Behavioural/Emotional Disorders 3 ch (W) (EL)

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) (EL)

Allows 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.

ED5100 Practicum 21 ch (EL)

Fifteen weeks of school and classroom experience. Graded on a credit/no credit (CR/NCR) basis. *Prerequisite:* Only students admitted to the BEd (4-year) program in Trinidad and Tobago may register.

ED5102 Curriculum and Evaluation in the Early Years 3 ch (W) (EL)

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) (EL)

Planning a multi-disciplinary curriculum approach building on children's curiosities, enabling them to interact, question, connect, problem solve, communicate and represent learning, focusing on the teacher's role in implementing a project-based approach in the early years.

ED5104 Observation and Pedagogical Documentation 3 ch (W) (EL)

Investigates current practices in observing and documenting children's learning in early childhood environments in collaboration with learners, colleagues and families.

ED5105 Connecting Home and Schooled Literacies 3 ch (W) (EL)

Examines theory and practice of connecting home and school literacies for the development of a literate community.

ED5106 Digital Literacies in the Early Years 3 ch (W) (EL)

Investigates the impact of technologies on play and emergent digital literacies, exploring ways in which educators and families can support engagement with technologies (or digital environments) in early childhood settings and homes.

ED5141 Orientation to Counselling 3 ch (W) (EL)

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) (EL)

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 (Cross-Listed: FNAT 3703) 3 ch (W) (EL)

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.

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) (EL)
Culture-based education: design, development, and implementation. Appropriate evaluation and assessment.

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) (EL)
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.

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) (EL)
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 (Subject, Learner Levels) 3 ch (W)
Examines research and theory of problem-solving with young children. Emphasizes the teacher's role as the 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) (EL)
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) (EL)
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) (EL)
Art education theories and practices as they apply to learning across the curriculum.

ED5213 Issues in Art Education 3 ch (W) (EL)
An examination of local, national, and international issues currently being debated in art education.

ED5241 Philosophy of Music Education 3 ch (W) (EL)
A course rooting methodology in significant, current philosophical trends tailored to students planning to teach music at any level.

SECTION H: FREDERICTON COURSES

ED5242 Music for the Classroom Teacher 3 ch (W) (EL)

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) (EL)

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 (Elementary, Middle, Secondary) 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

Aims, materials, methods of teaching language, literature, and composition. Middle school and high school.

ED5354 Teaching Secondary English II 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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.

SECTION H: FREDERICTON COURSES

ED5362 Symbolic Representation in Children's Play, 3 ch (3C) (W) (EL) **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) (EL)

Focus on appropriate methodology for teaching mathematics at the high school level.

ED5423 Teaching Middle School Mathematics 3 ch (W) (EL)

Focus on appropriate methodology for teaching mathematics at the middle school level.

ED5424 Teaching Mathematics in the Elementary School 3 ch (W) (EL)

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) (EL)

Explores 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 languages and world views.

ED5427 Trends in Mathematics Education 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

Examines curriculum and pedagogy in elementary health and physical education programs.

ED5488 Teaching Games in Secondary Physical Education 3 ch (W) (EL)

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 Physical Education 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

Focuses 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) (EL)

Answers 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) (EL)

Examines the concept of science from Indigenous 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) (EL)

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) (EL)

This course will explore the ways that science is 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) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

Dans ce cours, vous aurez l'occasion de vous familiariser avec les principes et les pratiques de la littératie en français langue 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. *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) (EL)

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 développer et d'essayer des pratiques et des stratégies qui favorisent l'enseignement et l'évaluation du français dans divers programmes et l'intégration 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) (EL)

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) (EL)

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) (EL)

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. Graded on a credit/no credit (CR/NCR) basis.

ED5567 Specialized Techniques in ESL Teaching 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

Examination of fundamental issues in second language education such as definitions and assessment of bilingualism, early and later acquisition of a second language, cognitive effects of bilingualism, evaluation of second language education programs, literacy and multi-literacy.

ED5586 Mi'kmaq and Wolastoqey Language and Teaching Methods 3 ch (W) (EL)

Introduces methods for teaching Wolastoqey and Mi'kmaq languages in elementary school.

ED5620 Introduction to Teaching Secondary Social Studies 6 ch (W) (EL)

Students will develop initial competence in selected aspects of social studies teaching.

ED5621 Introduction to Social Studies in Elementary Education 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

Students will develop initial competence in selected aspects of social studies teaching with particular emphasis on citizenship education and geography.

ED5626 Introduction to Teaching Secondary History 3 ch (W) (EL)

Students will develop initial competence in teaching history with particular attention to professional scholarship in fostering historical thinking.

ED5627 Contact and Post-Contact Around The World 3 ch (W) (EL)

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) (EL)

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) (EL)

Historical trends and contemporary issues in classroom practice and curriculum development.

ED5684 The Anthropology of Knowledge 3 ch (W) (EL)

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) (EL)

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) (EL)

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) (EL)

The theoretical and practical applications of multimedia technologies across the curriculum will be explored.

ED5699 Cultural Studies Through Multimedia 3 ch (W) (EL)

Critical analysis of the cultural products and practices surrounding multimedia in education will be examined.

ED5801 International Baccalaureate Educator Certificate Introductory Professional Seminar 6 ch (W) (EL)

Provides an introductory and broad overview of the International Baccalaureate (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. *Prerequisite:* This course is only open to students in the IBEC program, or with permission from the faculty.

ED5802 International Baccalaureate Educator Certificate Advanced Professional Seminar 6 ch (W) (EL)

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. *Prerequisite:* This course is only open to students in the IBEC program, or with permission from the faculty.

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 (EL)

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 practices and

SECTION H: FREDERICTON COURSES

professional growth. Graded on a credit/no credit (CR/NCR) basis. (Only offered in Trinidad & Tobago)

ED5973 Special Topics in Technology Education 3 ch

Research of current and emerging trends and developments in technology, Technology Education and educational/instructional technology.

ED5976 Instructional Technology Across the Curriculum 3 ch (W) (EL)

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) (EL)

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.

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 (EL)

Eighteen weeks of school and classroom experience. *Prerequisite:* only students admitted to the BEd (4 year) program in Montreal may register. Graded on a credit/no credit (CR/NCR) basis.

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.

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

Designed for practicing teaching professionals who have responsibilities directly related to citizenship and social studies education. The focus is on 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.

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 modeled 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 an 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 [Section H](#) 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 Measurements 2 ch (1C 2L) (EL)

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 2 ch (3L) (EL)

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.

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. Introduction to electronic devices. *Prerequisites:* MATH 1013, ECE1813 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 and MATH 1503 or equivalent. *Co-requisite:* MATH 3503 or equivalent.

ECE3031 Electrical and Computer Engineering Design 4 ch (3C 1T 1.5L) (EL)

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 3111.

ECE3111 Electronics I 4 ch (3C 1T 3L*)

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 complement 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 3L*) (EL)

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 3L*)

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) (EL)

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 3L*) (EL)

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 3L*)

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 Energy Systems 4 ch (3C 1T 1.5L) (EL)

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 or ECE 2701.

ECE3821 Electromagnetics I 4 ch (3C 1T 1.5L)

This course covers the foundations of electromagnetics for engineers. Topics include, but are not limited to: vector calculus, Maxwell's equations, static and time-varying electric and magnetic fields and transmission lines. *Prerequisites:* ECE 2711 MATH 2513, MATH 3503.

ECE4040 Electrical and Computer Engineering Design Project 8 ch (2C 4L) (W) (EL)

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 46 additional credit hours of ECE core courses.

ECE4133 Instrumentation Design 4 ch (3C 3L*) (EL)

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 3L*)

Considers the philosophy and practice of the design of semiconductor circuits. *Prerequisite:* ECE 3122.

ECE4173 Devices and Circuits for VLSI 4 ch (3C 3L*)

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.

SECTION H: FREDERICTON COURSES

ECE4242 Computer Architecture 4 ch (3C 3L*)

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) (EL)

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 3L*)

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 3L*) (EL)

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 3L*) (EL)

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. FPGA-based peripheral devices. One or more design projects. *Prerequisite:* ECE 3232.

ECE4323 Modern Control Systems and Applications 4 ch (3C 3L*) (EL)

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) (EL)

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 3L*) (EL)

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 3L*)

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, ECE 2021 and ECE 3221.

ECE4433 Safety Critical Design 4 ch (3C 3L*) (EL)

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 3L*)

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 3L*)

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 3L*)

Fourier Methods, Fast Fourier Transform, Filter design, Windows, State Variable Methods, Estimation. *Prerequisite:* ECE 4531.

ECE4553 Introduction to Pattern Recognition 4 ch (3C 3L*) (EL)

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:* CS1003 or CS1073, and successful completion of 110 ch in the engineering program.

ECE4623 Advanced Electrical Machines 4 ch (3C 3L*)

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 3L*)

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 3L*)

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 3L*)

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 RF Engineering 4 ch (3C 3L*) (EL)

Builds upon the foundations of engineering electromagnetics to prepare students for a career or further study related to radiofrequency (RF) engineering. Topics include, but are not limited to: guided and unguided electromagnetic waves, advanced transmission lines, impedance matching, antennas, and RF safety. *Prerequisites:* ECE 3821.

ECE4823 Communications and Network Engineering 4 ch (3C 3L*)

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 3L*)

Topics related to modern microwave systems including design and measurement of passive microwave circuits. *Prerequisite:* ECE 4813.

ECE4833 Microwave Engineering 4 ch (3C 3L*)

Covers theories of light, electromagnetic optics, and photon optics, as well as the interaction of light with matter, and the theory of semiconductor materials/devices and their optical properties. Students will be introduced to new paradigms on the generation of light by luminescence sources such as light-emitting diodes, the transmission of light through optical components, waveguides, and fibers with an emphasis on their applications in quantum technology for communications. The gained knowledge will be leveraged to design integrated photonic circuits in group projects. This course strengthens skills in (a) photonic technology, (b) semiconductor devices, and (c) general knowledge about quantum technology. *Prerequisites:* ECE 3111 and ECE 3821, or permission from the instructor.

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 3L*) (EL)

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 2711.

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 3L*)

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 Professional Lecture Series I 0ch (1C) (CR/NCR)

Introduce students to the Faculty of Engineering and the engineering profession through a series of guest lectures. Provides the fundamental concepts of the engineering profession and of engineering education and practice in Canada and worldwide. It includes an introduction to different study habits. Introduces the different engineering disciplines while focusing on those available at UNB. The concept of life-long learning and its importance in the engineering profession is introduced. Graded on a CR/NCR basis.

ENGG1002 Engineering Professional Lecture Series II 0ch (1C) (CR/NCR)

Introduce students to the engineering profession through a guest lecture series. Speakers from various engineering disciplines and job functions share their career experiences and discuss exciting engineering projects underway in the region. Introduces students to more advanced topics related to study habits. Discusses the concepts of sustainable development, environmental stewardship, and public safety and their importance for the engineering profession. Introduces the concepts of ethics and equity in engineering. Graded on a CR/NCR basis.

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. *Co-requisites:* ENGG 1015

ENGG1015 Introduction to Engineering Design and Problem Solving 2 ch (1C, 2L)

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.

ENGG4001 Engineering Professional Lecture Series III 4 ch (3C 1T* 3L*)

Prepare senior engineering students for the engineering profession through a guest lecture series. Speakers from various engineering disciplines and job functions share their career experiences and discuss exciting engineering projects underway in the region. The course stresses the need for continuous education in engineering and touches on current concepts of sustainable development, environmental stewardship, and public safety. Develops the concepts of ethics and equity in engineering. Graded on a CR/NCR basis. *Co-requisite:* ENGG4000 or CE4993 or ENVE4040 or GE4993, GGE4700 or SWE4040 or TME4025

ENGG4002 Engineering Professional Lecture Series IV 4 ch (3C 1T* 3L*)

Prepare senior engineering students for the engineering profession through a guest lecture series. Speakers from various engineering disciplines and job functions share their career experiences and discuss exciting engineering projects underway in the region. The course stresses the need for continuous education in engineering and touches on current concepts of sustainable development, environmental stewardship, and public safety. Develops the concepts of ethics and equity in engineering. Graded on a CR/NCR basis. *Co-requisite:* ENGG4000 or CE4993 or ENVE4040 or GE4993, GGE4700 or SWE4040 or TME4025

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.

ENGLISH**General Notes on Courses**

SECTION H: FREDERICTON 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. *Prerequisites:* A grade of C or better in ENGL 1103, or equivalent.

ENGL1105 Writing in Indigenous Contexts 3 ch (3C) (W) (Cross-listed: INDG 1105)

Examine Indigenous principles of prose writing. Develop an understanding of university writing, including essay structure and organization, through a course that focuses on Indigenous content, practices, research, and lived experiences. **Note:** Available only to students registered in courses administered by the Mi'kmaq-Wolastoqey Centre or by permission of the MWC.

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 3 ch (W)

Survey the development of the novel in the nineteenth and twentieth centuries, focusing on representative works by five writers. Explore the social contexts, the innovations in narrative form, and the elements of fiction, including plot, narration, characters, setting, and dialogue. Learn the basic principles of effective writing and practice these principles through quizzes and essays.

NOTE: Offered online.

ENGL1173 Introduction to Acting and Performance 3 ch (3 hours/wk) (Cross-Listed: DRAM 1173) plus practical work (EL)

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 Design for the Theatre 3 ch (3 hours/wk) (Cross-Listed: DRAM 2174) plus practical work

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 Wabanaki Confederacy/Atlantic Region 3 ch (3C) (W)

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 Canadian Literature (O) 3 ch (3C) (W)

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, Katherine 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 (Cross-Listed: FILM 2909) 3 ch (3C) (W)

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 romance and dream visions, bawdy *fabliau*, alliterative heroic verse, lyric poetry, verse satire, and drama. Also explores the historical and intellectual 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.

ENGL3085 Later Medieval Literature (O) 3 ch (3C) (W)

Consider the role of cross-cultural contact in crafting an English literary tradition, examining not only Latin and French influences but also Celtic borrowings and allusions. Examining how texts from the thirteenth to sixteenth centuries reflect the linguistic diversity of literary culture in England and how authors experimented with a flexible vernacular, the course has a wide generic scope, treating examples of dream-vision, romance, and prose narrative, as well as devotional and mystical texts. **Note:** Students can obtain credit for only one of ENGL 3085 or ENGL 3040.

ENGL3103 Creative Writing: Studio Course (O) 3 ch (3WS) (W) (EL)

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 (Cross-Listed: DRAM 3170) 6 ch (3 hours/wk 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.

SECTION H: FREDERICTON COURSES

Prerequisites: ENGL 2173 (or DRAM 2173) and ENGL 2174 (or DRAM 2174), or equivalent.

ENGL3175 Mainstage Production II (Cross-Listed DRAM 3175) 3 ch (3 hours/wk 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 Short Formats (Cross-Listed: FILM 3183) 3 ch (3WS) (W) (LE)

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 (Cross-Listed: FILM 3186) 3 ch (3WS) (W) (LE)

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 Contemporaries (A) 3 ch (3C) (W)

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 novelists as Behn, Defoe, Richardson, Sterne, 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 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)

Studies selected British Victorian authors, such as Robert Browning, Elizabeth Barrett. 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.

ENGL3485 The Victorian Gothic 3 ch (W)

The Gothic has been an influential and popular genre since its development in the eighteenth century. Unearth the Gothic aesthetics that permeate Victorian literature. Gothic phenomena—such as beleaguered heroines, animated corpses, and blood-thirsty vampires—give voice to the darker anxieties of the Victorian period, creating an acutely contemporary mode. Course texts engage with key Gothic concepts, such as the phantasmagoria, the Female Gothic, and Freud's uncanny. **NOTE:** Open-entry course taught online

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: A Historical Survey to the Present 3 ch (3C) (W)

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), Zitkala-Ša (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.

ENGL3689 Black and Asian Can Lit(s) (O) 3 ch (3C) (W)

Examine Black Canadian literature and Asian Canadian literature, with an emphasis on their contemporary (post-1970) development. Consider the two traditions within their distinct or entangled literary contexts as well as historical conditions like slavery, indentured labour for the Canadian Pacific Railway, the 1914 Komagata Maru incident, the destruction of Africville in Halifax, the 1988 Multiculturalism Act, and the Black Lives Matter movement. Gain an understanding of how the traditions intersect and diverge on key terms like diaspora, race, settler, the land, and the nation. Authors may include Dionne Brand, George Elliott Clarke, Edith Maude Eaton/Sui Sin Far, Francesca Ekwuyasi, Larissa Lai, Suzette Mayr, Shani Mootoo, Michael Ondaatje, Soraya Peerbaye, M. NourbeSe Philip, Mary Ann Shadd, Rita Wong, and Fred Wah.

ENGL 3698 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 proletarian 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 in the 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, and South Asia (A) 3 ch (3C) (W)

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, and South Africa (A) 3 ch (3C) (W)

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.

ENGL 3885 Ancient Greek Literature and its Legacies in English (O) (Cross-Listed: CLAS 3885) 3 ch (3C) (W)

Examine foundational texts from the major genres of Ancient Greek literature, including epic and lyric poetry, tragic and comic drama, oratory, and philosophical prose. Become familiar with canonical authors such as Homer, Sappho, Euripides, Aristophanes, Demosthenes, and Plato. Explore literary features of the texts, as well as issues of gender, sexuality, politics, ethics, and cultural contact. Develop an understanding of the legacy of Ancient Greek literature in English literature from the Renaissance to the present, including the diversity of early modern and contemporary authors who have written in English in dialogue with the Classical Greek canon (e.g., Keats, Soyinka, Walcott, Vuong). All texts will be read in English; no prior familiarity with the ancient world required.

ENGL 3886 Roman Literature and its Legacies in English (Cross-listed: CLASS 3886) (O) 3 ch (3C) (W)

Examine foundational texts from the major genres of Roman literature, including epic, lyric, and satire, tragic and comic drama, oratory, philosophical prose, and the ancient novel. Become familiar with canonical authors such as Vergil, Ovid, Horace, Sulpicia, Seneca, and Cicero. Explore literary features of the texts, as well as issues of gender, sexuality,

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politics, ethics, and imperialism. Develop an understanding of the legacy of Roman literature in English literature from the Renaissance to the present, including the diversity of early modern and contemporary authors who have written in English in dialogue with the Classical Roman canon (e.g., Spenser, Milton, Morrison, Tempest). All texts will be read in English; no prior familiarity with the ancient world required.

ENGL3903 Film Theory (Cross-Listed: FILM 3903) 3 ch (3C) (W) (EL)

Engage in the history of film theory, with how filmic experiments arose, and with the legacy of these ideas in film. The history of film has also been the history of exploring what unique powers film has to reflect, challenge, and alter our perceptions of the world. Explore the potential of moving images through our own creative and experimental projects. No filmmaking or editing experience required. **NOTE:** Students can obtain credit for only one of ENGL 3903 and FILM 3903.

ENGL3907 Film Genre (O) (Cross-Listed: FILM 3907) 3 ch (3C) (W)

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 ENGL 3907 and FILM 3907.

ENGL3908 Zombies in Film (O) (Cross-Listed: FILM 3908) 3 ch (3C) (W)

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 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)

Explore 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 ENGL 3917 and FILM 3917.

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) 3ch (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 will be 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, pleasure, etc.

ENGL4170 Thesis Production and Independent Project (Cross-Listed: DRAM 4170) 6 ch (practical work)

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 ENGL2174 (or DRAM 2174) and ENGL 3170 (or DRAM 3170) and permission of the Director of Drama.

ENGL4173 Thesis Production (Cross-Listed: DRAM 4173) 3 ch (practical work)

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 (Cross-Listed: DRAM 4174) 3 ch (practical work)

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 foot 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:* 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:* 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 abjecting them? *Prerequisite:* 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:* Open to ENGL Honours students.

ENGL5153 Narratives of the Sea (O) 3 ch (3S) (W)

Examine novels and poems featuring the sea by international authors. Narratives of sea voyages alternate with land-based tales with oceanic obsessions, prompting discussion of the varied meanings attributed to the sea by literary writers. While archetypal themes of exploration, discovery, return, initiation, endurance, risk, immobilization, and the quest have traditionally shaped sea narratives, the course also considers imperialism and nationalism, slavery and naval power, diaspora and exile, ecology and the environment, and masculinity and femininity. *Prerequisite:* 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 situation 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:* 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:* Open to ENGL Honours students.

ENGL5189 Contemporary Canadian Long Poem (O) 3 ch (3S) (W)

Survey the breadth of contemporary Canadian long poems, exploring such issues as the long poem's relationship with genre and postmodernism; formal and thematic innovations; the tensions between lyric and narrative, with connections to the oral roots in epic poetry; and the politics of voice and identity. Poets studied include Dionne Brand, Anne Carson, George Elliott Clarke, Louise Bernice Halfe, Robert Kroetsch, Daphne Marlatt, Erin Mouré, bpNichol, Michael Ondaatje, Lisa Robertson, Fred Wah, and Phyllis Webb. *Prerequisite:* Open to ENGL Honours students.

ENGL5193 Dirty Nature Writing (O) 3 ch (3S) (W)

Explore dirty nature writing, a "composter" genre that embraces messiness and rejects the nature/culture distinction, through hybrid critical/creative writing. Walk through the weeds and get hands dirty on course excursions. Readings include a wide sampling of works across genres of poetry (Pico; Whitehead), fiction (Simpson; Hurston), academic essays (Sloane;

Haraway), and creative non-fiction (Blackwell; Kolbert). Choose to submit creative or critical writing for a final portfolio project. *Prerequisite:* Open to ENGL Honours students.

ENGL 5198 Space, Place, and Identity in Postcolonial Fiction (O) 3 ch (3S) (W)

Examine contemporary postcolonial novels from Africa, the Caribbean, South Asia, Australia, the UK, and Canada. Through brief lectures, class discussion, presentations, and short secondary readings, learn how these fictions engage imaginatively with ideas of space, place, identity, and related concepts such as land, nation, boundary, territory, migration, exile, home, dwelling, environment, and self. A recurring theme is displacement: the experience of characters who are forcibly, voluntarily, or otherwise moved from familiar surroundings and prompted to re-establish their identities and renegotiate relations with others. Readings include historical novels and ones set in the present or future, as well as a mix of realistic and more fantastical or speculative narratives. *Prerequisite:* Open to ENGL Honours students.

ENGL5283 The Culture of Physic: Women's Writing and Medicine in Early Modern England (O) 3 ch (3S) (W)

Examine how the textual practices associated with medical care and knowledge infiltrated women's literary writing. Diagnosis of illness, making medicines, and preventing disease were recognized as essential knowledge for seventeenth-century mothers and housewives, and women practised medicine at home and as professional practitioners. Beginning with feminist critiques of medicine and relevant history of medicine scholarship, readings explore how early modern autobiography, poetry, fiction, and drama consider reproductive care, childbirth, disease, sociability, disability, race, and empire. *Prerequisite:* Open to ENGL Honours students.

ENGL 5446 Radical Victorian Fiction: Narrating Social Inequality (O) 3 ch (3S) (W)

Examine the representation of social inequality and gain insight into the form and function of difference in Victorian fiction. Develop an understanding of the relationship between literature and the formation of social identities – particularly how novels give expression to the evolution of ideas about class, race, ethnicity, gender, sexuality, and disability during this period. Investigate themes such as the representation of difference as 'monstrous' in gothic fiction; the connection between literary realism and revolution; the role of racial Otherness in the construction of Empire; and the formal impact of gender and sexual dissidence. Discover how difference is conceived of and represented historically – as well as how it shapes our world today. *Prerequisite:* Open to ENGL Honours students.

ENGL5623 Re-Conceiving the Long Poem (O) 3 ch (3S) (W)

Engage with current theories of the contemporary long poem—using recent long poems by Dionne Brand, Maggie Nelson, and Tommy Pico as case studies—through discussion, seminar presentations, facilitation questions, and a final assignment that offers both a critical and a creative writing option. *Prerequisite:* Open to ENGL Honours students.

ENGL5684 Indigenous Futurism: Speculative Fiction and New Media for a New World (O) 3 ch (3S) (W)

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:* Open to ENGL Honours students.

ENGL5687 Gender and Sexuality in Indigenous Literature (O) 3 ch (3S) (W)

Explore how Indigenous people viewed gender prior to European contact and how the imposition of Christianity and the Indian Act have impacted gender and sexuality in Indigenous communities. Colonization has had a significant impact on gender and sexuality in Indigenous cultures across Turtle Island. Explore the ways in which contemporary Indigenous authors reclaim Indigenous conceptions of gender and sexuality in a selection of novels, poems, and nonfiction works. *Prerequisite:* Open to ENGL Honours students.

ENGL 5743 Neoliberal Fictions (O) 3 ch (3S) (W)

Examine contemporary American novels that respond to neoliberal ideology and imagine alternatives to it. Neoliberalism, a doctrine that asserts the primacy of the free market, has shaped what seems politically, economically, and culturally possible since the 1980s. Explore how neoliberalism transformed the contemporary novel and how certain works of literature, in turn, guided the evolution of neoliberalism or challenged its dominance. Authors discussed may include Don DeLillo, Karen Tei Yamashita, Colson Whitehead, Chang-Rae Lee, Jennifer Egan, Jesmyn

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Ward, Jonathan Lethem, Rachel Kushner, and Richard Powers. *Prerequisite:* 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:* Open to ENGL Honours students.

ENGL 5985 The Double in Women's Fiction (O) 3 ch (3S) (W)

Survey the role of the double with a focus on contemporary fiction, exploring how social constraints have shaped literary doubles in women's literature. Examine how the double allows women writers to navigate, survive, and undermine the continued limitations placed on them. Authors include Charlotte Brontë, Daphne Du Maurier, Patricia Highsmith, Jean Rhys, Louise Erdrich, Namwali Serpell, Ottessa Moshfegh, Toni Morrison, and Bora Chang. Topics to be discussed include the body, beauty, race, class, and sexuality. *Prerequisite:* Open to ENGL Honours students.

ENVIRONMENTAL MANAGEMENT

This section contains course descriptions for students entering the Bachelor of Science in Environmental Management program. See beginning of [Section H](#) for abbreviations, course numbers and coding.

ENVM1001 Professional Skills in Forestry and Environmental Management 3 ch (3C 2L) (W) (EL)

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.

ENVM1002 Foundations of Environmental Management and Stewardship 4 ch (3C 2L) (EL)

Takes a "Big Ideas" approach. It reviews foundational ideas to Forestry, Resource Management, Conservation and Sustainability. Both the historical ideas (the nature of nature, management and Indigenous management, sustained yield, industrial revolution, colonialism, conservation/preservation, etc.) and contemporary ideas (permaculture, limits to growth, ecological footprints, sustainability, managing the commons, and climate change) are discussed with a focus on human values and ethics. The course emphasizes oral and written communication, critical thinking and analysis, and leadership. *Prerequisite:* ENVM 1001.

ENVM1532 Ecological Modeling 4 ch (3C 2L)

Gain essential skills in translating intricate ecological processes into simplified models. Develop proficiency in widely-used tools, including spreadsheet and modelling software. Master the art of constructing models and conducting simulations. Learn how to use the potential of ecological models for forecasting, and develop skills of interpreting model implications, and translate them into meaningful recommendations that drive sustainable environmental practices. *Prerequisite:* FOR1001

ENVM2004 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.

ENVM2021 Natural Resource Management, Institutions, Policy and Governance 3 ch (3C)

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.

ENVM2023 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.

ENVM2114 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.

ENVM2531 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.

ENVM3000 Indigenous Issues and Perspectives in Natural Resources Stewardship 3 ch (1C) (EL)

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 Indigenous institutions and how these relate to and interact with institutions of western society.

ENVM3002 Applied Environmental Management 5 ch (3C 3L) (EL)

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.

ENVM3005 Environmental Planning: People & Policy 3 ch (3C)

Introduces students to environmental policy-making, explores differing perspectives on environmental policy, strategies for collaborative environmental decision-making, and developing and applying a framework for understanding these issues. Uses case studies from around the world to provide a comparative lens through which to view the issues. In addition to formal lectures, the course will include guest speakers, and individual and group projects. *Prerequisite:* ENVM 2021.

ENVM3112 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:* ENR 1532.

ENVM3201 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.

ENVM3261 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.

ENVM3457 Forest Watershed and Water Quality Management 5 ch (3C 3L) (EL)

Emphasizes principles affecting forest watershed management at the landscape level. Leads from analyzing temporal and spatial data about water retention and flow to building hydrological and GIS-based mapping models. Watershed related issues and exercises deal with effects of weather, climate, atmospheric deposition, pollution and watershed operations on forest type, productivity, carbon and nutrient sequestration, cycling, water quality, soil erosion and on- and off-road trafficability. *Prerequisite:* (FOR2281 or FOR5281) and FOR2505 or permission of instructor

ENVM3532 Ecohydrology 3 ch (2C 3L)

Introduces the topic of ecohydrology and expands on the introduction to hydrological principles and processes offered in earlier courses, before introducing aquatic biota and the concept of ecological systems. Students develop comprehension of the hydrological cycle, structure and dynamics of rivers, wetlands, lakes, and as groundwater in the waterscape. Materials will demonstrate the interconnectivity among hydrology and ecology, followed by the exploitation of water resources by humans. *Prerequisite:* FOR2113 and (ENVM2114 or ENVM3201)

ENVM3888 Individual Project I 3 ch (EL)

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.

ENVM4001 Environmental Impact Assessment and Management 3 ch (3C) (EL)

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.

ENVM4002 Stakeholder Approaches to Environmental Problem Solving 3 ch (3 C/S)

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.

ENVM4020 Management Practicum 8 ch (3C 3L) (EL)

Practical exercise in 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 work within the management planning framework to develop an integrated landscape management plan related to natural resource management of the environment and ecosystems today and into the future. Learning modules are provided specific to the needs of the project. Additional topics include project management, conflict resolution, professional practice, and associations. The project requires each group to complete a management strategy (plan) report and presentation. *Prerequisite:* ENVM 3002, FOR 2281, and (ENVM 3457 or FOR 3445).

ENVM4101 Professional Internship in Forestry and Environmental Management (Cross-Listed: FOR4101) 3 ch (3C) (LE) (W) (EL)

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. Enrolment is limited and students need to contact the Faculty's Student Services Coordinator before registering. Students cannot receive credit for both ENVM 4101 and FOR 4101. *Prerequisite:* Prior work experience and either ENVM 3002 or FOR 3000.

ENVM4111 Fisheries and Aquatic Sciences Techniques 3 ch (3C) (EL)

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.

ENVM4888 Individual Project II 3-5 ch (EL)

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.

ENVM4920 ENVM Stewardship Report (Full Year) 6 ch (3C 3L) (EL)

Stewardship report for ForEM second undergraduate degree students only. *Prerequisite:* Completion of FOR4020

ENVM4973 Environmental Management Field Camp 2 ch (6 Days) (EL)

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.

ENVM4991 Honours Project 6 ch (W) (EL)

EM 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 Assistant Dean of Undergraduate Studies prior to the end of third year to discuss project requirements and potential topics. **NOTE:** Minimum CGPA for acceptance is 3.0

ENVM5003 Environmental Management Tools 3 ch (3C) (EL)

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

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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.

FAMILY VIOLENCE ISSUES

See beginning of [Section H](#) 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. Normally offered online.

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.

FVI2003 Interpersonal Cyberviolence (Cross-Listed: SOCI 2003) 3 ch

Examine issues associated with cyberviolence, the crimes that fall under the umbrella of cyberviolence, and online intervention strategies. Consider relevant theories, existing research and student experiences of online communication. Normally offered online. Note: Students may obtain credit for only one of SOCI2003 or FVI2003.

FVI2009 Human Trafficking (Cross-Listed: SOCI 2009, CRIM 2009) 3 ch

Human trafficking is a reality across Canada and around the world. Every day, at-risk youth and adults are manipulated and forced into the sex trade or labour market. Situate human trafficking as a crime stemming from gender based violence and intersecting structural inequalities. Self-position, critically reflect on experiences, and identify stereotypes as well as victim-blaming in media representations and public discourses. Assess state and community responses to human trafficking. Normally offered online. Note: Students may obtain credit for only one of CRIM2009, FVI 2009, or SOCI2009.

FVI3006 Intervention Strategies and Programs for People who Batter (Cross-Listed: SOCI 3006) 3 ch (3C) (W)

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. Credits cannot be obtained for both FVI 3006 and SOCI 3006.

FVI3007 Religion and Family Violence 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 (Cross-Listed: SOCI 3634) 3 ch

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.

FVI 4338 Family Law and Family Violence 3 ch (Cross-listed: SOCI/CRIM 4338)

Examine the challenges faced by victims of family violence in family law processes, the protections in place for victims of family violence, and the options available for resolving legal disputes when family violence is present. Consider the unique needs of vulnerable groups and the importance of collaborative approaches to safety for survivors of family violence. Offered online only across all course codes. *Prerequisite:* 3ch in Family Violence Issues, Sociology, or Criminology. Note: Students may obtain credit for only one of FVI4338, CRIM4338 or SOCI4338.

FVI 4339 Intersecting Violences: Global Perspective 3 ch (Cross-listed: SOCI/CRIM 4339)

Explore how gender, power, and violence are linked. Discover root causes and social factors that contribute to gender-based violence. Analyze macro-level power constructs such as colonization, systemic racism, and misogyny alongside micro-level expressions of interpersonal violence. Learn about community-based efforts to end cycles of violence, and implement dynamic approaches to individual and community healing. Offered online only across all course codes.

Prerequisite: 3ch in Family Violence Issues, Sociology or Criminology. Note: Students may obtain credit for only one of FVI4339, CRIM4339, or SOCI4339.

FILM

See beginning of [Section H](#) 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 (Cross-Listed: MAAC 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 FILM 2998 (or MAAC 2998) and FILM 3999 "Editing and Post-Production" (or MAAC 3999 "Editing and Post-Production").

FILM2999 Digital Film Production II (Cross-Listed: MAAC 2999) 3 ch (3C)

This second course in the production sequence puts emphasis on applications 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 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)

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 Documentary Media (A) (Cross-Listed: MAAC 3075) 3 ch (3C)

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 Formats 3 ch (3WS) (LE)

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 3204 and MUS 3204.

FILM 3455 Latin American Cinema 3 ch (3C) [W]
(Cross-listed: MAAC/CCS3455)

Provides students with a background in Latin American cinema, emphasizing the most productive centres such as Mexico, Cuba, Brazil, and Argentina. Equal emphasis is placed on both cinematographic and thematic analysis of films studied. Cultural and historical context will be provided. Language of instruction is English. Students taking this course to fulfill a Major or Honours requirement in Spanish must submit required work in Spanish. Students who have completed WLCS 3455, or SPAN 3455 may

not receive credit for CCS 3455. *Prerequisites:* 30 credit hours of university courses.

FILM 3772 Film Directors (A) (Cross-listed MAAC3772) 3 ch (3S)
Provides a concentrated study of the work of selected major directors of narrative, documentary, and experimental cinema. Concepts and theories of authorship are incorporated into close analysis of selected bodies of work. The films are considered in terms of thematic and stylistic consistency and variation as well as biographical, social, and political factors. *Prerequisite:* MAAC/FILM 2022.

FILM3903 Film Theory (Cross-Listed: ENGL 3903) 3 ch (3C) (W)

Engage in the history of film theory, with how filmic experiments arose, and with the legacy of these ideas in film. The history of film has also been the history of exploring what unique powers film has to reflect, challenge, and alter our perceptions of the world. Explore the potential of moving images through our own creative and experimental projects. No filmmaking or editing experience required. **NOTE:** Students can obtain credit for only one of ENGL 3903 and FILM 3903.

FILM3907 Film Genre (O) (Cross-Listed: ENGL 3907) 3 ch (3C) (W)

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) (Cross-Listed: ENGL3908) 3 ch (3C) (W)

Zombie films make up one of the longest living sub-genre 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 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 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 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)

Explore 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 ENGL 3917 and FILM 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

SECTION H: FREDERICTON COURSES

3999 "Film and Video Production" cannot obtain credit for FILM 3999 "Editing and Post-Production" or for FILM 3999.

FILM4000 Digital Film Production III (Cross-Listed: MAAC 4000) 6 ch (6WS)

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 5 ch (3C 3L) (EL)

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.

FOR1432 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. *Prerequisite:* FOR 1001.

FOR2006 Introduction to Natural Resources Management 4 ch (2C 3L) (EL)

Introduces natural resources management concepts and practices for a variety of natural systems so that students can effectively work across related disciplines. Objectives: (a) introduce key concepts and issues applicable to contemporary natural resources management; (b) introduce quantitative methods to help understand and evaluate natural resources management problems and planning. *Prerequisite:* ENVM 1001.

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.

FOR2281 GIS with Applications in Forestry and Environmental Management 3 ch (2L)

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 4 ch (2C 3L) (EL)

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) (EL)

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:* FOR1001 and a university course in Biology or Botany; or permission of instructor.

FOR2435 Fundamentals of Forest Tree Physiology and Genetics 3 ch (2C 3L)

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) (EL)

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 4 ch (2C 3L) (EL)

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 4 ch (2C 3L) (EL)

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.

FOR3005 Silviculture and Stand Intervention Design 4ch (2C 3L) (EL)

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 Foundations 4 ch (3C 6L) (EL)

This course builds on concepts introduced in its prerequisites but concentrates more specifically on forest management as a discipline. It begins with a brief introduction and history of forest management in Canada, then explores the fundamental principles of forest management planning, including determining the scope and scale of management situations, characterizing and valuing forests to support management objectives, and estimating and projecting forest values over time to facilitate planning strategies. *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 Remote Sensing in Forestry & Environmental Management 3 ch (3L*)

Introduction to current remote sensing technologies and their application in the fields of forestry and environmental management. Students explore the principles of remote sensing, acquiring a foundation in the theory of active and passive sensors, and the practice of the collection and processing of remotely sensed data at a variety of spatial scales. *Prerequisites:* FOR2281 or FOR5281

FOR3445 Ecology of Populations and Communities 5 ch (3C 3L) (EL)

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) (EL)

Practical exercise in 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 work within the management planning framework to develop an integrated landscape management plan related to natural resource management of the environment and ecosystems today and into the future. Learning modules are provided specific to the needs of the project. Additional topics include project management, conflict resolution, professional practice, and associations. The project requires each group to complete a management strategy (plan) report and presentation. *Prerequisites:* FOR 2281, FOR 3005, FOR 3006, ENVM 3002, and ENVM 3457. *Co-requisite:* FOR 4096.

FOR4096 Advanced Topics in Forest Management 4 ch (3C 3L) (EL)

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 3 ch (3C) (LE) (W) (EL) and Environmental Management (Cross-Listed: ENVM 4101)

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. Enrolment is limited and students need to contact the Faculty's Student Services Coordinator before registering. Students cannot receive credit for both ENVM 4101 and FOR 4101. *Prerequisite:* ENVM 3002 or FOR 3000.

FOR4303 Optical, Thermal Infrared and Radar Remote Sensing 3 ch (3C/L)

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 Polarimetric Images 3 ch

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 and (FOR 2281 and FOR 5281)

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 Natural Disturbance of Forests 4 ch (3C 3L) (EL)

Presents management approaches to forest disturbances that include fire, drought, introduced species, insects and pathogen outbreaks, windstorms, and ice storms. This course will explore their interactions at the stand/population and landscape levels, including implications associated with climate change. 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, and FOR 3006, or permission of instructor.

FOR4655 Wildlife Investigational Techniques (A) 3 ch (3C/L) (EL)

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 (Cross-Listed: BIOL 4723) 5 ch (3C 3L) (W) (EL)

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 (EL)

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 (EL)

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.

FOR4920 Fore For Stewardship Report (Full Year) 6ch (1C 3L) (EL)

Stewardship report for ForEM second undergraduate degree students only. *Prerequisite:* Completion of ENR4020 or ENVM4020

FOR4973 Forestry Field Camp 2 ch (6D) (EL)

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.

SECTION H: FREDERICTON COURSES

FOR4991 Honours Research Project 6 ch (W) (EL)

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 & Environmental Management 3 ch

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 generalized 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

Provides an introduction to LIDAR technology, including sensor types, platforms and acquisition parameters before springing into the use of airborne laser scanning (ALS) data for environmental management and planning. Students will use ArcGIS Pro, FUSION, 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, as well as enhanced forest inventory (EFI) creation via linear regression and random forest methods. *Prerequisite:* FOR 2281 or FOR 5281 or permission of the instructor.

FOR5801 Structural Performance of Engineered Wood Products 3 ch (2C 3L) (EL)

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 [Section H](#) for abbreviations, course numbers and coding.

FR1014 Français Fondamental I 3 cr (3C) (EL)

Développement des compétences communicatives orales et écrites de base. Introduction aux cultures francophones. Destiné aux étudiantes et étudiants n'ayant pas suivi de cours de français après la 10^e année. Ce cours et le FR1015 correspondent aux objectifs A1 du Cadre européen commun de référence pour les langues (CECR). **NOTE :** Fermé aux étudiants et étudiantes ayant fait leurs études en français, ayant participé à des programmes d'immersion ou qui ont complété un cours de français en 11^e année. Ne peut être crédité pour des étudiantes ou étudiants qui ont réussi tout autre cours de français offert par le Département d'études françaises.

FR1014 Basic French I 3 ch (3C) (EL)

Develop basic oral and written communicative competencies. Learn about Francophone cultures. Reserved for students who have not taken French beyond grade 10. This course and FR1015 are aligned with the objectives of level A1 of the Common European Framework of Reference for Languages (CEFR). **NOTE:** Not open to students educated in French, students who have participated in immersion programs, or students who have completed grade 11 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) (EL)

Suite du FR1014. Destiné aux étudiants et étudiantes n'ayant pas suivi un cours de français après la 11^e année. Ce cours et le FR1014 correspondent aux objectifs A1 du Cadre européen commun de référence pour les langues (CECR). **NOTE :** Fermé aux étudiants et étudiantes ayant fait leurs études en français, ayant participé à des programmes d'immersion ou qui ont complété un cours de français en 12^e année. Ne peut être crédité pour les étudiants ou étudiantes ayant réussi tout autre cours offert par le Département d'études françaises sauf le FR1014. *Préalable :* FR1014 ou équivalent.

FR1015 Basic French II 3 ch (3C) (EL)

Continuation of FR1014. Designed for students who have not completed any French courses after grade 11. This course and FR1014 are aligned with the objectives of level A1 of the Common European Framework of Reference for Languages (CEFR). **NOTE:** Not open to students educated in French, students who have participated in immersion programs, and students who have completed grade 12 French. May not be taken for credit by students who have successfully completed any course offered by the Department of French other than FR1014. *Prerequisite:* FR1014 or equivalent.

FR1034 Communication orale et écrite I 3 cr (3C) (EL)

Développement des compétences langagières et apprentissage des stratégies de communication. Découverte du monde francophone à travers des textes et des activités multimédia. Destiné aux étudiantes et aux étudiants qui ont complété des cours de français jusqu'en 12^e année. Ce cours et le FR1044 correspondent aux objectifs A2 du Cadre européen commun de référence pour les langues (CECR). **NOTE :** Fermé aux étudiantes et étudiants ayant réussi tout autre cours offert par le Département d'études françaises à l'exception du FR1014 ou du FR1015.

FR1034 Oral and Written Communication I 3 ch (3C) (EL)

Develop language proficiency and learn communication strategies. Discover Francophone cultures through selected readings and multimedia activities. Designed for students who have completed French courses up to grade 12. This course and FR1044 are aligned with the objectives of the level A2 of the Common European Framework of Reference for Languages (CEFR). **NOTE:** Not open to students educated in French, or to students who have participated in immersion programs. 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) (EL)

Développement des compétences langagières et apprentissage des stratégies de communication. Découverte du monde francophone à travers des textes et des activités multimédia. Destiné aux étudiantes et étudiants qui ont suivi des cours de français jusqu'en 12 année. Suite du FR1034. Ce cours et le FR1034 correspondent aux objectifs A2 du Cadre européen commun de référence pour les langues (CECR). **NOTE:** Fermé aux étudiantes et étudiants ayant réussi tout autres cours offert par le Département d'études françaises à l'exception du FR1014, du FR1015 ou du FR1034. *Préalable:* FR 1034 ou équivalent. .

FR1044 Oral and Written Communication II 3 ch (3C) (EL)

Develop language proficiency and learn communication strategies. Discover Francophone cultures through selected readings and multimedia activities. Designed for students who have taken French courses up to grade 12. Continuation of FR1034. This course and FR1034 are aligned with the objectives of level A2 of the Common European Framework of Reference for Languages (CEFR). **NOTE:** Not open to students educated in French or to students who have participated in a high school immersion program. 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 1015 or FR 1034. *Prerequisite:* FR 1034 or equivalent.

FR1184 Langue et littérature I 3 cr (3C)

Amélioration de l'écriture en français par l'apprentissage de méthodes efficaces de rédaction. Développement de la compréhension de textes par une initiation à la littérature d'expression française. Ce cours est conçu pour les élèves diplômés de programmes d'immersion ou équivalent. **NOTE:** Ne peut être crédité pour les étudiants et les étudiantes qui ont réussi les cours FR2124, FR2124 ou FR2154.

FR1184 Language and Literature I 3 ch (3C)

Improve writing skills in French by learning efficient writing techniques. Enhance reading comprehension through an introduction to literature in French. This course is intended for graduates of French Immersion or equivalent. **NOTE:** May not be taken for credit by students who have successfully completed FR2124, FR2124 or FR2154.

FR1194 Langue et littérature II 3 cr (3C)

Amélioration continue de l'écriture et de la compréhension de texte. Ce cours suit le FR1184. **NOTE:** Ne peut être crédité pour les étudiants et les étudiantes qui ont réussi les cours FR2124 ou FR2154. *Préalable:* FR1184 ou équivalent.

FR1194 Language and Literature II 3 ch (3C)

Continue to improve your writing skills and reading comprehension. This course follows FR1184. **NOTE:** May not be taken for credit by students who have successfully completed FR2124 or FR2154. *Prerequisite:* FR1184 or equivalent.

FR2034 Communication orale et écrite III 3 cr (3C) (EL)

Développement des habiletés de compréhension et d'expression orale nécessaires pour fonctionner dans la vie quotidienne et le monde du travail. Perfectionnement des stratégies de lecture et d'écriture. Révision de la grammaire et enrichissement du vocabulaire. **NOTE:** Fermé aux étudiants et étudiantes scolarisés en français ou aux finissants et finissantes d'un programme d'immersion. Ne peut être crédité pour les étudiants et les étudiantes qui ont réussi les cours FR1184, FR1194, FR2054, FR2124 ou FR2154.

FR2034 Oral and Written Communication III 3 ch (3C) (EL)

Develop the listening and speaking skills needed for social and work situations. Reinforce reading and writing strategies through a review of grammatical points and vocabulary enrichment. Taught in French. **NOTE:** Not open to Francophones or graduates of French immersion. May not be taken for credit by students who have successfully completed FR1184, FR1194, FR2054, FR2124 or FR2154.

FR2054 Communication orale et écrite IV 3 cr (3C) (EL)

Approfondissement des notions grammaticales et des stratégies d'écriture par l'acquisition de techniques d'écriture et d'auto-correction. *Préalable:* FR2034 ou équivalent.

FR2054 Oral and Written Communication IV 3 ch (3C) (EL)

Reinforce understanding of grammatical concepts and develop writing strategies through the acquisition of writing techniques and editing skills. Taught in French. **NOTE:** May not be taken for credit by students who have successfully completed FR1184, FR1194, FR2124 or FR2154. *Prerequisite:* FR2034 or equivalent.

FR2124 Aspects du monde francophone (A) 3 cr (3C)

Exploration du monde francophone et ses contextes culturels à travers une série d'exercices de lecture, d'écriture et de discussion. **NOTE:** Fermé aux étudiantes et étudiants ayant suivi le FR1124.

FR2124 Aspects of the Francophone World (A) 3 ch (3C)

Explore the Francophone world and its cultural contexts through a series of oral and written exercises. **NOTE:** May not be taken for credit by students who have successfully completed FR1124.

FR2154 Lecture et écriture (A) 3 cr (3C)

Amélioration du français écrit (compréhension et production de textes) par l'acquisition de notions de grammaire, syntaxe et style littéraire et par le renforcement des acquis. *Préalable:* FR1194 ou équivalent.

FR2154 French Reading and Writing (A) 3 ch (3C)

Improve written French skills (comprehension of brief literary texts and essay-writing) through the acquisition of grammar, syntax and literary style in French, and the reinforcement of previously acquired skills. *Prerequisite:* FR1194 or equivalent.

FR2164 Initiation à la littérature française 3 cr (3C)

Présentation des 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 major authors in French literature through in-depth study of selected texts and an introduction to textual analysis and essay writing.

FR2174 Le français au XX^e siècle 3 cr (3C)

Description du français contemporain. Français standard et variantes régionales, mots et tournures à la mode, expressions idiomatiques. Les principales difficultés du français seront abordées.

FR2174 French in the 21st Century 3 ch (3C)

Develop a better understanding of contemporary French through the study of 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, des revendications autochtones, du multiculturalisme et de la mondialisation. Destiné principalement aux étudiantes et étudiants issus de programmes d'immersion ou scolarisés en français.

FR2184 Francophone Cultures of Canada 3 ch (3C)

Study the French-speaking cultures of Canada through a multidisciplinary lens, specifically through the history, politics, literature, cinema, and recent events of francophone Canada. Consider the distinct character of Quebec and the important minority regions of francophone Canada (Acadie, Ontario, Western Canada). Reflect on language rights, multiculturalism, Indigenous rights 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 étudiants et étudiantes scolarisés en français ou ayant participé à un programme d'immersion au secondaire.

FR3034 Advanced Oral French I 3 ch (3C)

Develop oral expression by discussion of topical subjects and develop oral comprehension through recordings, including broadcasts. Not open to Francophones or to students who have participated in immersion programs in high school.

SECTION H: FREDERICTON COURSES

FR3044 Grammaire et stylistique - niveau avancé 3 cr (3C)

Étude de structures grammaticales et de leurs applications stylistiques par des exercices qui ciblent l'acquisition de la grammaire.

FR3044 Advanced Grammar and Stylistics 3 ch (3C)

Study advanced French-language grammatical structures and their stylistic applications through exercises that target French grammar acquisition.

FR3054 Rédaction I 3 cr (3C)

Approfondissement des outils permettant de s'exprimer par écrit en français dans des textes plus longs. Développement des stratégies d'auto-correction.

FR3054 French Composition I 3 ch (3C)

Acquire the tools to express yourself in written French by learning to write longer essays and developing editing skills.

FR3064 Le français au bureau 3 cr (3C)

Aborde les principes de la communication orale et écrite en milieu de travail par la pratique d'écriture de lettres et autres documents administratifs. *Préalable* : FR2054 ou FR2154.

FR3064 French in the Workplace 3 ch (3C)

Learn the principles of oral and written communication in the workplace through the practice of writing letters and other administrative documents in French. *Prerequisite*: FR2054 or FR2154.

FR3074 Lecture avancée du français (O) 3 cr (3C)

Amélioration des aptitudes à la lecture en français à travers l'étude de courts textes littéraires et savants.

FR3074 Advanced French Reading (O) 3 ch (3C)

Improve your reading skills in French through the study of literary and scholarly short texts

FR3204 Stylistique comparée 3 cr (3C)

Mise en opposition et analyse de divers aspects de chaque langue. Examen des 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)

Compare and analyze the principal grammatical structures of English and French by emphasizing the differences which exist even though the same concepts are being expressed. Begin to learn basic elements of translation theory.

FR3234 La structure du français (A) 3 cr (3C) (EL)

Exploration de la structure interne de la langue française: la phonétique et la phonologie, la morphologie et la syntaxe. Apprentissage et application de la transcription phonétique et identification des traits définatoires de la prononciation française et introduction à la description des unités sonores fondamentales du français et de la grammaire du mot et de la phrase. Découverte des aspects distinctifs des différentes variétés régionales de la langue française.

FR3234 The Structure of French (A) 3 ch (3C) (EL)

Understand the inner scaffolding of the French language, including phonetics and phonology, morphology, and syntax. Learn and practice phonetic transcription and identify defining features of French pronunciation. A descriptive look at the fundamental sounds of French, as well as recurring patterns in the structure of words and sentences. Discover the distinctive features of regional varieties of French.

FR 3404 Introduction à l'étude du langage 3 cr (3C)

Investigation de l'intersection du langage et de la société. Mise en relief de l'étude des systèmes de signes linguistiques vus comme des produits d'une dynamique sociale. Discuter de manière critique des théories du langage, de Saussure à Chomsky. Les thèmes comprennent: ce que l'on entend par l'étude scientifique du langage, les caractéristiques partagés par toutes les langues naturelles et les facteurs (géographiques, technologiques, culturels et politiques) qui entraînent l'évolution de la langue (p. ex. l'invention de nouveaux pronoms, les mots tabous, la néologie euphémique).

FR33404 Introduction to the Study of Language 3 ch (3C)

Investigate the intersection of language and society. Emphasis is on language viewed as negotiated meaning-making in a social context. Critically discuss theories of language, from Saussure to Chomsky, and including structuralism, functionalism, and semiotics. Topics include what is meant by the scientific study of language, what all natural human languages have in common, and what external factors – geographical,

technological, cultural, and political – occasion language change (e.g., new pronouns, taboo words, and the euphemism treadmill).

FR 3414 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. *Préalable* : FR3404 ou l'équivalent; FR3414 et FR3404 peuvent être suivis simultanément.

FR 3414 Sociolinguistics of French 3 ch (3C)

Learn about 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. Pre or corequisite: FR3404 or equivalent.

FR 3424 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. *Préalable* : FR3404.

FR 3424 Phonetics and Phonology of French 3 ch (3C)

Acquire the basic concepts and methods of phonetics and phonology. Learn about the basic French sound system and its various phonetic realizations depending on dialects and sociolects. Prerequisite: FR3404.

FR 3444 La créativité lexicale 3 ch (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. *Préalable* : FR3404.

FR 3444 Lexical Creativity 3 ch (3C)

Consider how the vocabulary of a language is a dynamic system constantly evolving to meet the changing needs of society. Study and analyze the structure of the lexicon, the creative mechanisms of language, and the various types of word formations, including derivation, neology, loanwords, and metaphors. *Prerequisite*: FR3404.

FR 3454 Histoire de la langue française 3 cr (3C)

Histoire de la langue française

FR 3454 History of French 3 ch (3C)

Study the evolution of French from its roots in Latin to the present. Old, Middle and Modern French are sketched: the phonology, morphology, syntax and vocabulary of each period are studied. *Prerequisite*: FR3404.

FR 3464 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. *Préalable* : FR3404.

FR 3464 Syntax 3 ch (3C)

Study sentence structure in the framework of generative grammar. Examine phrase structure and transformational rules. Explore some classical problems of French syntax. *Prerequisite*: FR3404.

FR 3494 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. *Préalable* : FR3404 ou l'équivalent; FR3494 et FR3404 peuvent être suivis simultanément.

FR3494 Myths and Realities about Language 3 ch (3C)

Discuss widespread myths about language and 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, and artificial language. Pre or co-requisite: FR3404 or equivalent. The language of instruction is in French.

FR3524 Roman et cinéma 3 cr (3C)

Étude des œuvres françaises et québécoises, de leurs adaptations cinématographiques et des défis posés par le passage du langage littéraire à celui du cinéma.

FR3524 The Novel and Film 3 ch (3C)

Study selected French and French-Canadian novels and their adaptation in film, as well as the challenges arising from the transfer of 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. annuaire sous Gender and Women's Studies.)

FR3534 Women's Writings 3 ch (3C)

Read 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 du 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)

Gain a historical overview of women's writing in France from the Middle Ages to the present day. Study major women authors, from Marie de France to Annie Ernaux.

FR3544 Littérature belge et suisse (A) 3 cr (3C)

Examen de la diversité de la production littéraire francophone moderne et contemporaine en Belgique et en Suisse.

FR3544 Swiss and Belgian Literature in French (A) 3 ch (3C)

Examine the diverse production of modern and contemporary Belgian and Swiss literature written in French.

FR3564 Folie et littérature 3 cr (3C)

Étude des rapports entre les auteurs, leurs œuvres 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 que la science-fiction, la fantasy, le polar et le roman historique.

FR3574 Popular Fiction 3 ch (3C)

Study plot-driven fictional works written in French with the intent of fitting into a specific literary genre, such as science fiction, fantasy, crime, and historical fiction.

FR3584 Auteurs non francophones écrivant en français 3 cr (3C)

Examen sociologique, littéraire et formel de textes écrits en français par des non-francophones ayant publié leurs ouvrages lors de l'émergence de l'Europe comme entité politique. Notamment, Agota Kristof (Hongrie), Milan Kundera (Tchéquie), Andreï Makine (Russie) et Nancy Huston (Canada) constitueront les exemples à l'étude. Les étudiants et étudiantes 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)

Examine an increased number of works written in French by non-Francophones as a result of the unification of Europe using sociological, literary, and formalist approaches of works by Agota Kristof (Hungary), Milan Kundera (Czech Republic), Andreï Makine (Russia), Nancy Huston (Canada). Classes are 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 CCS3594) 3 cr (3C) (EL)

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 étudiantes et 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 résidences, 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 étudiantes et étudiants qui s'inscrivent à CCS 3594 peuvent choisir de lire les œuvres en traduction et remettre leurs travaux en anglais.

FR3594 Paris in Literature (O) (Cross-Listed: CCS 3594) 3 ch (3C) (EL)

Explore how Paris has played a key role in French literature. The city has inspired numerous poets and novelists and has been described by countless others. Read and study a number of works that highlight Paris and the regional capital of Poitiers. Visit 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 CCS 3594.

FR3624 Littérature française de la Renaissance à l'Âge classique 3 cr (3C)

Survol des mouvements littéraires ayant marqué le 16^e et le 17^e siècle français; étude d'auteurs représentatifs de diverses pratiques littéraires telles que le roman (La Fayette), l'essai (Montaigne), le théâtre (Racine) et la poésie (Ronsard).

FR3624 French Literature from Renaissance to Classicism 3 ch (3C)

Survey major literary movements in the 16th and 17th centuries in France; study writers representing various literary genres: the novel (La Fayette), essays (Montaigne), drama (Racine), and poetry (Ronsard).

FR3634 Littérature française des Lumières 3 cr (3C)

Survol de l'évolution des idées et de la philosophie au 18^e siècle en France; étude de textes représentatifs de diverses pratiques littéraires telles que l'autobiographie (Rousseau), le roman (Grafigny, Diderot), l'essai (Voltaire).

FR3634 French Literature in the Enlightenment 3 ch (3C)

Survey the evolution of thought and philosophy of 18th Century France; study texts representing various literary genres such as autobiography (Rousseau), novel (Grafigny, Diderot), and essay (Voltaire).

FR3654 Littérature française 1800-1850 3 cr (3C)

Étude des aspects du romantisme français, courant marqué par une conscience nouvelle du rôle de l'artiste, et par le triomphe du roman (Chateaubriand, Balzac, Gautier, Stendhal) et de la poésie lyrique (Hugo, Nerval, Lamartine).

FR3654 French Literature 1800-1850 3 ch (3C)

Study aspects of French Romanticism, a literary movement marked by a new awareness of the role of the artist and the triumph of the novel (Chateaubriand, Balzac, Gautier, Stendhal) and of lyrical poetry (Hugo, Nerval, Lamartine).

FR3664 Littérature française 1850-1900 3 cr (3C)

Exploration du réalisme, du naturalisme, de l'art pour l'art, du décadentisme; ces mouvements découlant tous du romantisme, qui 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)

Explore Realism, Naturalism, l'Art pour l'Art, the Decadents; all literary movements that are rooted in Romanticism and attempt to answer the questions haunting the individual in an increasingly technological world. Analyze works by Flaubert and Zola, Maupassant and Sand, Baudelaire, Verlaine and Mallarmé.

FR3665 Littérature française 1900-1950 3 cr (3C)

Étude d'un demi-siècle marqué par deux guerres mondiales et une conjoncture de crise permanente. Panorama critique de la vie littéraire (Dada, surréalisme, existentialisme, théâtre de l'absurde) qui se concentre aussi sur les principaux enjeux du contexte social et idéologique du temps.

FR3665 French Literature 1900-1950 3 ch (3C)

Study the first half of a century shaped by two World Wars and a climate of ongoing crisis. Survey the literary movements of this time (Dada, Surrealism, Existentialism, Theatre of the Absurd) that also focus on the social and ideological context of this period.

FR3674 Le roman français a contemporain 3 cr (3C)

Lecture attentive de quelques romans représentatifs du début du 21^e siècle. Les courants intellectuels, les préoccupations esthétiques, politiques, sociales et morales qui se dégagent de ces œuvres seront abordés.

FR3674 The Contemporary French Novel 3 ch (3C)

Examine selected novels from the beginning of the 21st Century. Explore the 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 à nos jours 3 cr (3C)

Étude de l'évolution du roman en France du Moyen Âge au 21^e siècle, incluant le roman de chevaliers, le roman épistolaire, le roman réaliste et naturaliste et le Nouveau Roman. Description of the course in English.

SECTION H: FREDERICTON COURSES

FR3675 The Novel in France from its Origin to the Present Day 3 ch (3C)

Study the evolution of the French novel from the Middle Ages to the 21st century, including chivalric romance, epistolary novels, Realist and Naturalist novels, and Nouveau Roman.

FR3684 Théâtre français 3 cr (3C)

Se concentre sur l'évolution du théâtre en France, du marivaudage à l'absurde, de la satire au burlesque. Étude des formes dramatiques dans des pièces de Molière, Marivaux, Beaumarchais, Rostand, Ionesco.

FR3684 French Theatre 3 ch (3C)

Focus on the evolution of theatre in France, from "marivaudage" to the absurd world of Ionesco and from satire to burlesque. Analyze technical aspects of dramaturgy in plays by Molière, Marivaux, Beaumarchais, Rostand and Ionesco.

FR3694 Littérature française de 1950 à 2000 3 cr (3C)

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. Courants abordés: le Nouveau Roman, le théâtre de l'absurde, les Hussards, l'Oulipo, le féminisme, le postmodernisme, l'autofiction.

FR3694 French Literature 3 ch (3C)

Study the second half of a century marked by the undermining of littérature engagée ("committed literature") caused by major social changes and multiple political upheavals. Cover the Nouveau Roman, Theatre of the Absurd, the Hussards, Oulipo, feminism, postmodernism, autofiction literary movements.

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)

Study the important poetic movements of French Canada: symbolism, regionalism, surrealism, nationalism, counterculture, formalism, and feminism; in addition to the language of poetry, versification, and figures of speech.

FR3834 Écrivaines québécoises contemporaines 3 cr (3C)

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)

Study 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)

Examen des œuvres issues du courant de la littérature migrante au Québec par l'entremise des axes de réflexion de l'exil, du rêve du retour, de l'identité hybride et de l'acculturation. Étude les enjeux de l'écriture et de ses modes d'expression romanesque, poétique, et dramatique en milieu minoritaire.

FR3844 Migrant Literature in Quebec 3 ch (3C)

Examine works that stem from a movement called Migrant Literature in Quebec through the lens of exile, fantasy of return, hybrid identity, and acculturation. Study issues of writing and its various forms in a minority setting, including fiction, poetry, and drama.

FR3854 Littérature acadienne des années 1960 et 1970 3 cr (3C)

Introduction à la littérature acadienne dans ses diverses manifestations. Une attention particulière sera portée à l'œuvre d'Antonine Maillet et aux poètes des années 1970 qui seront abordés dans la perspective d'une quête identitaire influencée par la modernité.

FR3854 Acadian Literature of the 1960s and 1970s 3 ch (3C)

Study Acadian literature in its diverse aspects. Pay special attention to the rise of Antonine Maillet and to the poets of the 1970s, who are studied through the lens of an ongoing search for a more modern identity.

FR3864 La littérature canadienne-française du 19e siècle 3 cr (3C)

Examen, à partir de quelques œuvres représentatives, de la formation d'une écriture romanesque et poétique, spécifique au Canada français; de son évolution de la rébellion de 1837 jusqu'à la fin du 19e siècle; de ses qualités et ses défauts. Étude de l'influence prédominante du contexte socio-culturel: lutte entre rouges et ultramontains, thèse du messianisme compensateur, censure et autocensure.

FR3864 French Canadian Literature of the 19th Century 3ch (3C)

Study the birth of a specific and distinct style of writing in the poetry and novels of French Canada through representative works. Examine its evolution from the rebellion of 1837 to the end of the 19th century as well as its qualities and shortcomings. Examine 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 20e 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)

Study French-Canadian literature of the first half of the 20th century which bears witness to an ever-popular ideology favoured by those in power, linking the survival of the French Canadian people with religion and agriculture. Discover how many writers promote this ideology as they celebrate the qualities of the Québec countryside, the soil, the Church, and the homeland. Examine 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 œuvres 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)

Read major works by French Canadian playwrights. Study 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 œuvres 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. Study representative works of this era 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 étudiantes et étudiants scolarisés en français.

FR4034 Advanced Oral French II 3 ch (3C)

Refine your competence in oral French through presentations, discussions, and debates on current topics. Not open to students who attended a French-language school.

FR4054 Rédaction II 3 cr (3C)

Amélioration de l'expression écrite par la rédaction de textes suivis.

FR4054 French Composition II 3 ch (3C)

Develop competence in writing structured full-length texts in French.

FR 4414 Français canadien 3 cr (3C)

Examen de traits caractéristiques du français parlé au Canada, notamment du franco-acadien et du franco-québécois. Préalable: FR3404.

FR4414 Canadian French 3 ch (3C)

Examine the major linguistic features of French spoken in Canada, in particular Acadian and Québécois French.

FR 4444 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. *Préalable*: FR3404.

FR 4444 Semantics 3 ch (3C)

Discover the study of meaning and reference through a historical survey of the field, and its place within general linguistics and amongst other fields of

human sciences. Learn fundamental notions for the examination of meaning relations; componential analysis. *Prerequisite:* FR3404.

FR 4464 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. *Préalable* : FR3404.

FR 4464 Linguistic Theory 3 ch (3C)
Understand fundamental concepts in modern linguistics. Examine the relation between form and meaning, the nature of grammatical representations, and their relevance. *Prerequisite:* FR3404.

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 Major French Author 3 ch (3C)
Study the works of a major literary author of the French speaking world.

FR4524 Cinéma québécois (A) 3 cr (3C)
Survол 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)
Survey Québecois film from an historical and aesthetic perspective. Explore the major characteristics of the Québecois cinematic imagination. Analyze 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 cr
Exploration de l'histoire et de 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
Explore 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 Alterité dans les littératures francophones de l'Afrique et des Caraïbes (O) 3 cr (3C)
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 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.

FR4564 Otherness in Francophone Literatures from Africa and the Caribbean (O) 3 ch (3C)
Discover the African and Caribbean literary traditions through a reflection on "Otherness," including a consideration of related concepts such as exoticism and the gaze. How does the question of Otherness allow us to reconsider francophone texts touching on colonization, slavery, racism, and genocide? Study 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) (EL)
Étude attentive d'un sujet particulier en littérature française. Sous la supervision d'un membre régulier ou associé du département, l'étudiant ou l'étudiante devra réaliser des travaux de lecture dirigée et de production écrite. *Préalable* : L'autorisation du professeur ou de la professeure.

FR4574 Directed Reading in French Literature 3 ch (3C) (W) (EL)
Conduct a detailed study of a specific topic in French studies. Work under the direction of a member of the Department or an associate of the Department to complete directed readings and written assignments. *Prerequisite:* Permission of the instructor.

FR4824 Littérature acadienne au 21^e siècle 3 ch (3C) (W)
Étude de la littérature acadienne du nouveau millénaire (depuis 2000) avec un intérêt particulier pour la langue d'expression et les thèmes traités par des auteurs tels que France Daigle, Rose Després, Herménégilde Chiasson, Jean Babineau et Georgette LeBlanc.

FR4824 Acadian Literature in the 21st Century 3 ch (3C) (W)
Study Acadian literature in the new millennium (since 2000) with particular focus on the language of expression and common themes in the works of authors such as France Daigle, Rose Després, Herménégilde Chiasson, Jean Babineau, and Georgette LeBlanc.

FR 4834 Littérature de la Renaissance acadienne (O) 3 cr (3C)
Aborde des éléments historiques, culturels, et littéraires de la Renaissance acadienne à partir de la publication d'Evangeline par Henry Wadsworth Longfellow en 1847 jusqu'à la poésie de Napoléon Landry en 1955. Analyse des extraits de romans, de pièces de théâtre et de la poésie de l'époque nationaliste sous une perspective idéologique et mythanalytique.

FR 4834 Literature of the Acadian Renaissance (O) 3 ch (3C)
Learn about historical, cultural and literary events of the Acadian Renaissance from the publication of Evangeline by Henry Wadsworth Longfellow in 1847 to the poetry of Napoléon Landry in 1955. Analyze excerpts of novels, plays and poetry from the nationalist period through ideological and mythanalytical lens.

FR4900 Mémoire de spécialization 6 cr (R) (EL)
Travail sous la direction d'un membre du Département. Réservé aux étudiants et étudiantes faisant une Spécialisation simple.

FR4900 Honours Report 6 ch (R) (EL)
Write an honours report under the supervision of a member of the Department. Reserved for Single Honours students.

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. *Prerequisite:* GWS 1003 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.

SECTION H: FREDERICTON COURSES

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) (EL)

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) (EL)

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 (EL)

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 (EL)

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 1L) (W) (EL)

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 exercises reinforcing course topics while building communication and analytical skills.

GGE3022 Survey Design and Analysis 5 ch (3C 3L) (EL)

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 (EL)

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 (EL)

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) (EL)

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) (EL)

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 3423.

GGE3353 Ocean Mapping 4 ch (3C 2L)

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 entities 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. *Prerequisite:* MATH 1503 or equivalent introduction to matrices and systems of linear equations.

GGE3700 Survey Project and Report 6 ch (2C 2L) (W) (EL)

A full year course (fall term then winter term) involving the completion of a cadastral survey project and reporting on the results, all under the direct supervision of a faculty member and licensed land surveyor. Lecture topics include economics and business management issues specific to the survey profession, financial decision making in geomatics, land surveying articling process, project management techniques, technical report writing, and presentation skills. Must be done in the student's final year of the programme. Open only to Bachelor of Geomatics Students, credit will not be given for both GGE 3700 and GGE 4700.

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.

GGE4303 LiDAR Fundamentals 3 ch (3C 2L)

Principles and characteristics of Laser scanning systems, their components, products, and limitations. Explore different laser scanning platforms including stationary and mobile mapping systems. Learn fundamentals of LiDAR Georeferencing. Strip Adjustment, and point cloud registration. Design data collection pipelines for Laser scanning applications. Perform essential point cloud processing and accuracy assessment. *Prerequisites:* GGE 2012, GGE 3042, and GGE 3423. *Co-requisites:* GGE 3342

GGE4313 Photogrammetry 4 ch (3C 2L)

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. Introduction of LiDAR and Photogrammetry. *Prerequisites:* GGE 3342 and GGE 3111.

GGE4423 Advanced Geographic Information Systems 4 ch (3C 2L)

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 3423.

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.

GGE 4513 Survey Law I 4 ch (3C 2L*) (W) (EL)

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) (EL)

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 (EL)

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 *Co-requisites:* 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. Students 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 selection 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 3L*)

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) (EL)

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 Computer Vision - Methods and Implementation 4 ch (3C 3L*) (EL)

Introduction to software implementation, including image data formats, programming standards, libraries, 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 Machine Learning and AI in Geomatics 4 ch (3C 2L) (EL)

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.

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.

SECTION H: FREDERICTON COURSES

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.

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.

GGE5404 Online Spatial Data Handling 3 ch (2C 2L)

Explore the history of the web, the evolution of cloud computing, and APIs. An introduction to computational notebooks through a combination of lectures and hands-on exercises using Jupyter Notebooks. Explore and query online spatial data, perform geospatial data operations (e.g.: spatial predicates) and statistical analysis (e.g.: spatial point pattern analysis, linear regression, logistic regression, decision trees), while developing notebooks that can be shared and re-used. Offered online as open entry.

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. *Prerequisite:* GGE 3423.

GGE5410 Spatial Data Processing 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 4313 and GGE 4423.

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 3L*)

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 2L*) (W) (EL)

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) (EL)

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 GGE 4513 and GGE 5521 or GGE 5522.

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) (EL)

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) (EL)

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) (EL)

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 phrases. 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 GER 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. 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. No prerequisite.

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 GER 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:**

SECTION H: FREDERICTON COURSES

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

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)

Surveys 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). What were the beliefs and worldviews of medieval people? What did they value? What did they fear? What were they willing to do to stay safe, to feel their lives mattered, to be happy? And how did this change over time? While the Christian faith was the lodestone of most Europeans' lives, some took paths that were feared or condemned by the Church and society. The focus is on the ways in which such heterodox ideas and practices laid the groundwork for the formation of a more modern mindset.

HIST1009 Epidemic Disease from the Middle Ages to the Present (O) 3 ch (3C) (W)

Explores the changing perceptions of epidemic disease from the 14th Century to the present day. By focusing on infectious illnesses such as plague, smallpox, cholera, influenza, and COVID-19, our examination considers various socio-cultural, medical, and governmental responses to epidemics (and pandemics). Particular attention is given to both change and continuity over time, posing (and seeking answers to) questions such as: how have explanations of and responses to epidemic disease changed over time; how have they remained the same; to what extent, and why?

HIST1133 Rome: The Eternal City II (O) 3 ch (3C) (W) (EL)

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) (EL)

An introduction to the politics, society, and culture of Italy since 1945. Normally taught on location. May not be taken by students who have taken HIST 3135.

HIST1305 Prohibition and Rum-running in Canada, 1827-1948 (O) 3 ch (3C) (W)

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 Historical Context (O) 3 ch (3C) (W)

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 Political Science. Students who take this course cannot take POLS 1451.

HIST1615 Resist, Rebel, Revolt: A Global History of Uprisings (O) 3 ch (W)

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-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 of 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 through their legacies and impact.

HIST1625 The Spy in History (O) 3 ch (3C)

This general interest course considers 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 histories.

HIST1715 Looking at the Past: Art, Culture, and Activism (O) 3 ch (3C) (W)

This general interest course is designed to acquaint students with the use of visual sources as historical evidence. Studies a broad range of visual culture, from paintings to advertisements to television, according to their historical meanings. Considers how historical images accrue meaning for the contemporary. **Restriction:** Not available for credit to students who have taken HIST 2715.

HIST1825 "Nothing Civil About It": Civil Wars Since 1900 (O) 3 ch (3C) (W)

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, societies, nations, and the world?

Foundation Level Courses

HIST2013 The Middle Ages I: Fall of Rome to 1100 (O) 3 ch (2C 1T) (W)
Examines the period from the end of the Roman Empire until the 11th Century. Topics include the evolution of Rome's three "daughter civilisations": Western Europe, the Byzantine Empire, and Islam, and the social, political, military, and cultural forces that shaped each. Not available for credit to students who have completed HIST 1010 or HIST 1005.

HIST2014 The Middle Ages II: 1100-1500 (O) 3 ch (2C 1T) (W)
Continues the broad examination of the medieval world, beginning c. 1000 AD and ending with the Age of Exploration. Explores the emerging social, political, intellectual, artistic, and religious currents and conflicts that led to the dawn of the modern world c. 1500. Not available for credit to students who have completed HIST 1010 or HIST 1006.

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 HIST 1020.

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 HIST 1020.

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 HIST 1100 or HIST 2100.

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 HIST 1100 or HIST 2100.

HIST2301 Canada: Empires and Imperialism, 1876 to 1876 (A) 3 ch (2C 1T) (W)

Examines the interaction between European empires and Indigenous nations and the formation of the Canadian settler state. Begins with Indigenous lifeworlds before 'contact' and ends with the 1876 Indian Act. Topics include the 'Doctrine of Discovery,' the system of racialized chattel slavery, early treaty relationships, British and French colonialism, westward imperialism, resource extraction, and confederation. Not available for credit to students who have completed HIST1300 or HIST2300.

HIST2302 Canada: Empires and Imperialism, 1876 to 1876 (A) 3 ch (2C 1T) (W)

Examines the relationship between Canadian imperialism and Indigenous nations. Begins with the 1876 Indian Act, the legislation which set the stage for the expansion of Canadian jurisdiction over Indigenous spaces. Topics include policing, the reserve system, residential schools, Canadian capitalism, Indigenous resistance, the revitalization of Indigenous societies, 'modern' treaties, European settlements, and our contemporary moment.

HIST2403 Understanding 'America' I: The United States to the Civil War (A) 3 ch (2C 1T) (W)

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: The United States since the Civil War (A) 3 ch (2C 1T) (W)

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.

HIST2453 Cold War Histories (O) 3 ch (3C) (W)

Introduces students to the American historiography of the Cold War. Concentrating on the interpretive differences between historians of the conflict illuminates a variety of historical approaches and methodologies. Features interactive learning and scholarly debates. Not available for credit to students who have taken HIST 4453.

HIST2603 Indigenous and Early Colonial Caribbean History (A) 3 ch (2C 1T) (W)

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 Colonial Caribbean (A) 3 ch (2C 1T) (W)

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, slave emancipation and struggles to define freedom, Indian indentureship, and nationalist and independence struggles.

HIST2815 Military History from Plato to NATO (O) 3 ch (3C) (W)

Provides a general introduction to the study of tactics, technology, battle control, logistics, and management. Illuminates historical developments through the investigation of select campaigns and battles. Not available for credit to students who have taken HIST 1815.

Advanced Level Courses**European History****HIST3001 West Meets East 1050-1600 (O), 3 ch (3C) (W)**

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.

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. *Prerequisite:* Prior completion of HIST 3011 an asset but not required. **Restriction:** Not available for credit to students who have taken HIST 3008.

HIST3015 Inventing Race: A Global History to 1804 (O) 3 ch (3C) (W)

Explores the history of race and racism from a global perspective from the Crusades to the end of the Haitian Revolution. Some topics of discussion include the creation of religious 'others,' anti-Judaism and early conspiracy theories, the 'Doctrine of Discovery' and European Empires, the legitimization of racism by the Enlightenment and the Scientific Revolution, the system of racialized chattel slavery, and the Haitian Revolution.

HIST3016 Inventing Race: A Global History Since 1804 (O) 3 ch (3C) (W)

Explores the history of race and racism from a global perspective from the end of the Haitian Revolution to our contemporary moment. Some topics of discussion include the shift from anti-Judaism to anti-Semitism, the creation of race as a scientific category, the rise of nationalism, eugenics, the Holocaust, punk as a grassroots anti-racism movement, and race and the global pandemic.

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 Scandinavian 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 those lives, from homestead to settlement, from work to pastime, from pagan to Christian, beginning 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) (EL)

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.

**HIST 3103 Conquest and Conversion of the Iberian World, 3 ch (3C) [W]
1400-1700**

Examine conquest and conversion as interconnected processes in territories colonized by the early modern kingdoms of Spain and Portugal. Consider the period between 1400 and 1700 as an era of conversions, exploring the complexity of religious conversion as well as many social, cultural, political, economic, and material transformations. Analyze a variety of primary sources and engage with pertinent historical debates. Compare the experiences of conquest and conversion in different regions throughout Europe, Africa, the Americas, and Asia. Investigate how Catholicism, Iberian rule, and slavery reshaped local politics, economies, and societies.

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) (EL)
(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) (EL)

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 Reformation (O) 3 ch (3S) (W)

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 in Modern Europe (O) 3 ch (3C) (W)

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 Early Modern British World (O) 3 ch (3C) (W)

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.

HIST3311 Acadie and the Atlantic World, 1604-1763 (O) 3 ch (2C 1T) (W)

Early modern Acadie is often discussed as a backwater, a remote border territory with isolated residents. Yet beyond the image of pastoral farmland and simple villagers, the pre-deportation history of Acadians is rich and diverse. It includes torrid family dramas, political intrigues, a witchcraft trial, and connections throughout the Atlantic world. Examines the development of Acadie from the first French settlement in 1604 through its expansion and eventual destruction by British colonial officials.

HIST3315 The October Crisis, 1970 (O) 3 ch (3C) [W]

In October 1970, a group of Quebec nationalists kidnapped two men to further the cause of independence. In response, Ottawa marshalled state security power to quell what it perceived as a terrorist insurrection. Explore

the background, unfolding, and aftermath of this crisis. How has nationalism shaped French and English Canada? What were the implications of the turn to violence by the Front de Libération du Québec? In what ways has the crisis shaped subsequent political confrontations between Quebec and Ottawa? How has it influenced debates over the appropriate role of state security forces in modern societies?

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 in Canada 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 Canadian Capitalism (O) 3 ch (3C) (W)

Examines the emergence of a distinct Canadian capitalism from the Royal Proclamation of 1763 (that in part established a system to appropriate Indigenous homelands) to our contemporary moment. Topics include racialized chattel slavery, the creation of private property, treaties and treaty rights, industrialisation and workers' rights, class and soldiers in the two world wars, labour movements and general strikes, class-based eugenics movements, policing, and the struggles of Indigenous land and water defenders.

HIST3344 Exploring the Rural in Canadian History (O) 3 ch (3C) (W)

Canada was a predominantly rural society until the mid-20th century, and rural life, work, and culture have left an indelible mark on it. Explores the history of rural Canada on its own terms and in the various ways it influenced Canadian history more broadly. We focus particularly on the development of rural economies, political and class tensions in rural society, the rural response to industrialization and technological innovation, and the impact of the rural on Canadian culture.

HIST3355 Nature, Culture, and the Canadian Environment (O) 3 ch (3C) (W)

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: Working to Overcome the Legacy of Residential Schools (O) 3 ch (3C) (W)

Situating the truth and reconciliation in process in Canada within 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

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extent of the success in implementing the commission's 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) **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.

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.

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.

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 Screening Blackness: African America, 3 ch (3C) (W) **at the Movies (O)**

Analyzes of the image of African Americans projected by Hollywood from the silent-film era to the present. Students will learn to 'read' films as historical documents. How do the movies both reflect and construct understandings of race and race relations? How have African Americans resisted Hollywood's racist stereotypes? Addresses these and other questions through the critical analysis of select films in historical context.

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.

HIST3452 The Vietnam War (O), 3 ch (3C) (W)

Introduces students to the historical controversies over the Vietnam War. Scholars remain divided on key questions including: 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? Prominently features seminar discussions and group debates. Not available for credit to students who have completed HIST 4452

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 Twentieth - 3 ch (3C) (W) **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 The CIA in American History (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 are 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.

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. *Prerequisites:* 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. *Prerequisites:* Permission of the instructor and the Department.

HIST3608 Histories of Madness (O) 3 ch (3C) (W)

Explores histories of madness in Britain and the Americas from early modern madhouses to present day mass incarceration. The course considers the great range of ideas about madness, efforts to treat and contain it, and the lived experiences of individuals deemed 'mad.' Topics include community, grassroots, and medical understandings of madness; madhouses, asylums, and institutional treatment; psychiatric care and rehabilitation; addiction and recovery; advocacy, activism, and rights.

HIST3615 A History of Slavery through 3 ch (3C) (W) **Film and Literature (O)**

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.

HIST3624 A History of the Climate Movement (O) 3 ch (W)

Examines the origins and evolution of the 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 time and 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) 3ch (3C) (W)

This course uncovers a history of disability on North America from pre-conquest to the twentieth century. Its 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 and/independent living movement.

HIST 3651 Growing up: Histories of Children, Youth and Family (A) 3 ch (3C)

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.

HIST3675 Abolition: From the Slave Trade to Mass Incarceration (O) 3 ch (3C) [W]

Explores the history of abolition in the Americas from the slave trade and slavery to the emergence of the modern prison abolition movement and recent developments concerning policing, immigration detention, and carceral spaces of containment. Considers the Atlantic origins of mass incarceration, the resistances it spawned, and the consequences of abolition in West Africa, Latin America, North America, and the Caribbean.

HIST3701 The Cultural Turn: Cultural Studies in Historical Context (O) (Cross-Listed: CCS 3701) 3 ch (3C) (W)

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 Culture 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 colonization from non-European perspectives. We will

focus on art and film, but will also draw upon literary, political, and theoretical texts.

HIST 3765 History of Music in Medieval and Renaissance Periods (A) (Cross-Listed: MUS 3765) 3 ch (3C) (W)

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 Classical Period (A) (Cross-Listed: MUS 3775) 3 ch (3C) (W)

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.

HIST 3795 A History of Music in the Twentieth Century (O) (Cross-Listed: MUS 3785) 3 ch (3C) (W)

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 of Richard Wagner 3 ch (3C) (W) (O) (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.

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: Strategic Crossroad of a Global War (O) 3 ch (3C) (W)

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, 1867-1953 (A) 3 ch (2C 1T) (W)

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, 1953-Present (A) 3 ch (2C 1T) (W)

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.

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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, 1500-2000 (O) 3 ch (3C) (W)

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, 1600-2000 (O) 3 ch (3C) (W)

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.

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.

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 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: Victims, Perpetrators, Bystanders (O) 3 ch (3C) (W)

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.

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 throughout the British Atlantic World between the 1760s and 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 Confederation 3 ch (2C 1T) (W)

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 Confederation 3 ch (2C 1T) (W)

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, Past Into Present (O) 3 ch (3C) (W)

Begins with the 18th century relationships between the Wabanaki Confederacy and the British and French Empires. Examines the emergence of New Brunswick as a distinct colony and then province within Canadian Confederation, focusing particularly on the role of global capitalism in shaping its history. Topics include racialized chattel slavery, the Peace and Friendship Treaties, Crown lands and settler colonialism, the University of New Brunswick, resource extraction and environmental history, Acadian settlements, Kouchibouguac National Park, land claims settlements, and Indigenous movements to defend the environment.

HIST 4465 The Cuban Missile Crisis (O) 3ch (3C) (W)

Introduces students to some of the ways scholars have approached the histories of the Cuban Missile Crisis. Considers 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. Students participate in a crisis simulation and cultivate the skills necessary to think critically about how scholars historicize the past. Not available for credit to students who have completed HIST 5465.

HIST4495 America in the Sixties (O) 3 ch (3C) (W)

An examination of the most tumultuous 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 backlash, and the sixties in myth and memory. How do the events of this watershed decade continue to shape American culture and politics?

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. Prerequisites: 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. Prerequisites: Permission of the instructor and the Department.

HIST4606 Gender, Race, and Disability in Colonial Contexts (O) 3 ch (3C) (W)

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 been channeled the scared for us. This course will explore the interactions of humans with other animals from roughly the fifteenth to the nineteenth century. A key theme of 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)

The 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 Africanism and Western Europe. The course discusses themes relating to the impact of slavery and emancipation on the social construction of race, gender identities, 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 the students transnational, trans-imperial, and comparative insight into how slavery and gender have shaped relations within and between communications in the Atlantic region.

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.

HIST4735 History and the Graphic Novel (O) 3 ch (3C) (W)

Examines the graphic novel as a medium for historical narratives and as a document produced in a specific historical context. Explores public engagement with history, history and memory, representations of the past, and the experience of history.

HIST4755 History and the Video Game (O) 3 ch (3C) (W)

Uses the medium of the video game to explore historical narratives and examine video games in historical context. Centering on historical research with respect to games and gaming, students will learn to read and play critically through in-class interactions with video games. Topics include Indigenous histories as portrayed in *Never Alone*, depictions of capitalism in *Portal 2*, and representations of settler colonialism in *Assassin's Creed 3*.

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.

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 regimes on military strategy, on land, sea and air action, and on peace-keeping.

HIST4861 Terrorism in History (O) 3 ch (3C) (W)

This course examines the use of terrorism as an agent of political change and repression in history. It introduces students to the debates over the definition and nature of terrorism and over the causes of the phenomenon. It explores the use of terrorism by institutional and state apparatus and by non-state groups, and the theories and theorists which underpinned its use. The course also discusses the impact on victims and societies, and efforts by nation-states and the international community to deal with the issue. Cases used to illustrate the course themes will cover the span of history, but will concentrate primarily on the 20th century.

HIST5007 Gender and Sexuality in Twentieth-Century Europe (O) 3 ch (3S) (W)

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.

HIST5013 German Empires from Settler Colonialism to Nazism (O) 3 ch (3S) (W)

SECTION H: FREDERICTON COURSES

Explore the German global empire to investigate themes in the history of settler colonialism, including power and governance, violence and war, race science and eugenics, and gender and sexuality. Examine connections between genocide in Namibia and Europe and consider scholarly debates around change and continuity in German history. Consider contemporary debates in Namibia, Tanzania, Cameroon, Samoa, and Germany around financial restitution and official apologies, education curricula, public memory, and museum exhibits.

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 Modern Atlantic World (O) 3 ch (3S) (W)

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.

HIST5125 Making Race in the Early Modern Spanish World (O) 3 ch (3S) (W)

Examine how the concept of race was naturalized and documented in the early modern Spanish world using sources from Iberia, Mexico, South America, and the Philippines from the fifteenth through eighteenth centuries. Explore topics of religious difference, colonization, slavery and resistance, legal status, and racialized thinking about bodies, sex, gender, and society. Analyze contemporary ideas about blood purity, Blackness, indigeneity, mestizaje, and connections between claims of whiteness and structures of power. Consider ongoing scholarly debates on histories of race, such as how race operates as a category in diverse colonial settings.

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 (O) 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 American State Policy, 1824-1982 (O) 3 ch (3S) (W)

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: Community, Family and Labour in Canada (O) 3 ch (3S) (W)

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.

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.

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 Environment in Atlantic Canada (A) 3 ch (3S) (W)

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; Making Digital History (A) 3 ch (3S) (W) (EL)

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 enrollments 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 (O) 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, 1890-1920 (O) 3 ch (3S) (W)

Considers a variety of themes in the history of the United States in the late-19th and early 20th Centuries. These include populism, imperialism, progressivism, radical politics, and the controversy surrounding the intervention of the United States in the First World War. How did Americans and their institutions respond to the rapid industrialization and modernization of these years?

HIST5449 Salem, 1692-1693 (O) 3 ch (3S) (W)

Explores the different scholarly interpretations of the Salem Witch Trials of 1692, focusing on the ways in which historians have analyzed the trials. Compares and contrasts the approaches of social, gender, economic, intellectual, and cultural historians as they have tried to make sense of this fascinating episode in North American colonial history.

HIST5455 African American Culture and Politics, 1890-1940 (O) 3 ch (3S) (W)

Explores the intellectual, cultural, and political history of African America during the Jim Crow era. Topics include the Atlanta Compromise, the Niagara Movement, the rise of civil rights organizations (e.g., the National Association for the Advancement of Colored People, the Urban League), the Great Migration, the Black Left, Marcus Garvey and Black nationalism, spirituals, the blues, ragtime, jazz, the Harlem Renaissance, and African America during the Great Depression. Our focus is on resistance and resilience, both as shaped by 'race leaders' such as Ida B. Wells, W.E.B. DuBois, and A. Philip Randolph, and as experienced by ordinary African Americans.

HIST5456 African American Culture and Politics, 1940-1990 (O) 3 ch (3S) (W)

Explores the intellectual, cultural, and political history of African America during the Civil Rights era and beyond. Topics include the March on Washington Movement, the Black church, the mainstream Freedom Movement, non-violent direct action, the Nation of Islam, anti-colonialism, Black Power and Afrocentrism, as well as such cultural phenomena as freedom songs, free jazz, the Black Arts Movement, soul and funk, blaxploitation, and hip hop. Considers the ideas and influence of a variety of African American luminaries, including Martin Luther King, Jr., Ella Baker, James Baldwin, Nina Simone, Malcolm X, Muhammad Ali, Archie Shepp, Amiri Baraka, Marvin Gaye, Larry Neal, Angela Davis, Jesse Jackson, bell hooks, and Mumia Abu-Jamal.

HIST5459 Watergate: Political Scandal in Contemporary America (O) 3 ch (3S) (W)

On June 17, 1972 five men were arrested 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 at they evolved in 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.

HIST5469 The Surveillance State: A History in National Security Agency (O) 3 ch (3S) (W)

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 the 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 has 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.

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. Prerequisites: Permission of the instructor and the Department.

HIST5554 Directed Reading Course/Practicum 3 ch (3C) (W) (EL)

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.

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: Slavery, Violence, and the Law (O) 3 ch (3S) (W)

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, 1492-Present (O) 3 ch (3S) (W)

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 seminar 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- 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, anti-colonialism, anti-slavery, democracy, freedom, and universality 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.

HIST5702 Histories of Art, Place, and Popular Culture (O) 3 ch (3S) (W)

Examines the interconnected histories of place, artistic practice, and popular resistance. Focuses 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 descended 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.

SECTION H: FREDERICTON COURSES

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.

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. Note: Requires the permission of the Director of Honours.

HIST5915 Fourth-Year Advanced Seminar 3 ch (3S) (W)
The advanced seminar allows select students to participate in one of the seminars offered to 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.

INDIGENOUS STUDIES

Includes courses reserved for students registered in courses administered by the Mi'kmaq-Wolastoqey Centre for Indigenous Students.

INDG1001 Essential Skills for Wolastoqey/Mi'kmaq Students 3 ch (2C 3L) (EL)

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). *Students may receive credit for ABRG 1001: Essential Skills for Wolastoqey/Mi'kmaq Students or INDG 1001: Essential Skills for Wolastoqey/Mi'kmaq Students, but not both.

INDG1002 Introduction to Indigenous Studies 3 ch (EL)

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 historical and contemporary. Decolonization as it pertains to governance and territorial right, health and community language and education will also be examined. *Students may receive credit for ABRG 1002: Introduction to Indigenous Studies or INDG 1002: Introduction to Indigenous Studies, but not both.

INDG1105 Writing in Indigenous Context 3 ch (W)
(Cross-Listed with ENGL 1105)

Study Indigenous principles of prose writing. Develop an understanding of university writing, including essay structure and organization, through a course that focuses on Indigenous content, practices, research, and lived experiences. (for students registered in courses administered by Mi'kmaq Wolastoqey Centre.

INDG1411 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 only). *Students may receive credit for ABRG 1411: Finite Mathematics or INDG 1411: Finite Mathematics, but not both.

INDG1412 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). *Students may receive credit for ABRG 1412: Elementary Calculus or INDG 1412: Elementary Calculus, but not both.

INDG1510 Nursing Foundations 3 ch (EL)

Provides students with knowledge, skills and applications of science and math for prospective nursing students. It is uniquely tailored to meet the needs of students wanting to enrol in the Bachelor of Nursing degree program and is not intended to be transferable as a prerequisite to other degree programs. To provide a central, unifying theme and relatable context to the course materials, the course will be centered around 'Samaqan, Samqwan, water. Registration is restricted to students enrolled in the Wocopsqoltime weci Spiqiahtuweq/Weli'kwejik Elaqsultiek (WWS) Program. *Students may receive credit for ABRG 1510: Nursing Foundations or INDG 1510: Nursing Foundations, but not both.

INDG1520 Etuaptmumk Foundations for Life Sciences 3 ch (EL)

Provides students with knowledge, skills, and applications in science and math for/from Wabanaki and Western Science perspectives. IT is uniquely tailored to meet the needs of students wanting to enroll in life science fields and is not intended to be transferable as a prerequisite to other degree programs, without their express permission. Registration is restricted to students enrolled in the Wocopsqoltime weci Spiqiahtuweq/Weli'kwejik Elaqsultiek (WWS) Program.

INDG2601 Topics in Wabanaki Literatures I 3 ch (EL)

Students will learn about the history of Wabanaki literatures in the Wabanaki homeland. What are traditional Wabanaki literary genres and concepts of literature, and how have these forms and ideas changed shape over time. *Prerequisite:* INDG 1002

INDG2602 Topics in Wabanaki Literatures II 3 ch (EL)

A study of recent literature by Wabanaki authors and storytellers. Authors may include Carol Dana, Peter Clair, Amanda Peters, Allen Sockabasin, Morgan Tally, Rebecca Thomas, Mihku Paul, Nolan Alvater, Carol Bachofner, and others. *Prerequisite:* INDG 1002

INDG3052 Place of Art in Indigenous Community Healing 3 ch (EL)

Explores how art and performance can be used as a means of representing and healing community trauma. Learners will be introduced to the deep capacity of art to empower people and communities, to help process experiences and histories, and to share and sometimes release stories. *Students may receive credit for ABRG 3052: Place of Art in Indigenous Community Healing or INDG 3052: Place of Art in Indigenous Community Healing, but not both.

INDG3055 First Nations Leadership Foundations 3 ch (EL)

*Students may receive credit for ABRG 3055: First Nations Leadership Foundations or INDG 3055: First Nations Leadership Foundations, but not both.

INDG3056 Practicing Leadership in First Nations Community Projects 3 ch (EL)

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. *Students may receive credit for ABRG 3056: Practicing Leadership in First Nations Community Projects or INDG 3056: Practicing Leadership in First Nations Community Projects, but not both.

INDG3109 Independent Studies 3 ch (EL)

Students will normally be limited to 6 ch of independent study. *Prerequisite:* Permission of an instructor is required before registration.

INDG3114 Introduction to Workplace Learning in First Nations Communities 3 ch (EL)

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. *Students may receive credit for ABRG 3114: Intro to

Workplace Learning in First Nations Communities or INDG 3114: Intro to Workplace Learning in First Nations Communities, but not both.

INDG3363 Communications: Speaking Practice 3 ch (EL)

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). *Students may receive credit for ABRG 3363: Communications: Speaking Practice or INDG 3363: Communications: Speaking Practice, but not both.

INDG3621 Current Topics in Self-Governance 3 ch (EL)

Examines the current topics within Indigenous self-governance in Canada, paying special attention to self-governance issues within Atlantic Canada, when applicable. The current politics, law, and social aspects of Indigenous self-governances will be explored and discussed, including but not limited to women, feminism, and governance, the Indian Act, White Paper, Constitution Act, 1982, urban Indigenous governance and more. The course goals will be met through various formats, including case studies, media, and literature. *Students may receive credit for ABRG 3621: Current Topics in Self-Governance or INDG 3621: Current Topics in Self-Governance, but not both.

INDG3682 Kikwosson/Wksitqamu: A land-based field course 3 ch (EL)

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.

INDG3684 Aspects of Wolastoqey and Mi'kmaq Culture 3 ch (EL)

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, and land claims. *Students may receive credit for ABRG 3684: Aspects of Wolastoqey and Mi'kmaq Culture or INDG 3684: Aspects of Wolastoqey and Mi'kmaq Culture, but not both.

INDG3685 Mi'kmaq Language I 3 ch (EL)

Elements of Mi'kmaq: phonology, morphology, syntax. Field methods. Instructional materials and approaches. *Students may receive credit for ABRG 3685: Mi'kmaq Language I or INDG 3685: Mi'kmaq Language I, but not both.

INDG3686 Wolastoqey Latuwewakon I 3 ch (EL)

'Ciw wen ketuwokehkimis eluwehket wolastoqey latuwewakon, tan eltaqahk naka tan eluwikhasik. 'Ciw wen ketuwokisit naka ketuwewestaq.

INDG3686 Wolastoqey Language I 3 ch (EL)

Elements of Wolastoqey: phonology, morphology, syntax. Field methods. Instructional materials and approaches. *Students may receive credit for ABRG 3686: Wolastoqey Language I or INDG 3686: Wolastoqey Language I, but not both. Wolastoqey Language Version

INDG3688 Contemporary Canadian First Nations Children's Literature 3 ch (EL)

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. *Students may receive credit for ABRG 3688: Contemporary Canadian First Nations Children's Literature or INDG 3688: Contemporary Canadian First Nations Children's Literature, but not both.

INDG3695 Mi'kmaq Language II 3 ch (EL)

Further studies in Mi'kmaq language. *Students may receive credit for ABRG 3695: Mi'kmaq Language II or INDG 3695: Mi'kmaq Language II, but not both. *Prerequisites:* 3 ch in Mi'kmaq Language.

INDG3696 Wolastoqey Latuwewakon II 3 ch (EL)

'Ciw wen keti ankuwokehkimis wolastoqey latuwewakon, tahalu eluwikhasik, elewestuhtimok naka atkuhkewakonol. 'Ciw yukt kisi wihqehtuhtit ABRG 3686 kosona wolitahatok nutokehikemit.

INDG3696 Wolastoqey Language II 3 ch (EL)

Second-level course in Wolastoqey, focused on syntax, conversation, and storytelling. *Students may receive credit for ABRG 3696: Wolastoqey Language II or INDG 3696: Wolastoqey Language II, but not both. *Prerequisites:* ABRG 3686 or permission of instructor.

INDG3922 Technology in Governance and Leadership 3 ch (EL)

Examines critically the use of software, hardware, and web-based services in First Nations community governance and leadership. The emphasis is the 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. *Students may receive credit for ABRG 3922: Technology in Governance and Leadership or INDG 3922: Technology in Governance and Leadership, but not both.

INDG4056 Advanced Community Projects 3 ch (EL)

Engages students in advanced project-based learning. Within a context of Wabanaki culture, community leadership, and service, learners will continue to hone and develop their complex skills in critical thinking, problem-solving, collaborating and communicating. Students may receive credit for ABRG 4056: Culture-Based Community Projects or INDG 4056: Culture-Based Community Projects, but not both.

INDG4109 Independent Studies 3 ch (EL)

Students will normally be limited to 6 ch of independent study. *Prerequisites:* Permission of an instructor is required before registration.

INDG4194 Peace and Friendship Treaties 3 ch (EL)

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. *Students may receive credit for ABRG 4194: Peace and Friendship Treaties or INDG 4194: Peace and Friendship Treaties, but not both.

INDG4664 First Nations Entrepreneurship 3 ch (EL)

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. *Students may receive credit for ABRG 4664: First Nations Entrepreneurship or INDG 4664: First Nations Entrepreneurship, but not both.

INDG4665 First Nations Perspectives and Organizational Behaviour 3 ch (EL)

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. *Students may receive credit for ABRG 4665: First Nations Perspectives and Organizational Behaviour or INDG 4665: First Nations Perspectives and Organizational Behaviour, but not both.

INDG4675 Mi'kmaq Language III 3 ch (EL)

This third-level course will focus on Mi'kmaq language grammar, word and sentence formation, in speaking and listening through storytelling, conversation and songs. *Students may receive credit for ABRG 4675: Mi'kmaq Language III or INDG 4675: Mi'kmaq Language III, but not both.

INDG4676 Mi'kmaq and Language IV 3 ch (EL)

This fourth level course will focus on Mi'kmaq vocabulary development, fluency in speech and literacy skills. *Students may receive credit for ABRG 4676: Mi'kmaq Language IV or INDG 4676: Mi'kmaq Language IV, but not both.

INDG4686 Wabanaki Worldviews 3 ch (EL)

Introduces 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. *Students may receive credit for ABRG 4686: Wabanaki Worldviews or INDG 4686: Wabanaki Worldviews, but not both.

INDG4696 Wolastoqey Latuwewakon III 3 ch (EL)

'Ciw yut wen keti ankuwi skicinuwatuwet naka wen keti piyemi woli 'sotok atkuhkakonol, mecimiw elewestuhtimokon naka elewestuhtimok, kapiw 'kaneyal naka pileyal lintuwakonol. 'Ciw yukt kisi wihqehtuhtit kinaq neqkikotok, kosona wolitahatok nutokehikemit.

INDG4696 Wolastoqey Language III 3 ch (EL)

Focus on grammar, word and sentence formation, in speaking and listening, through storytelling, conversation, and songs. *Students may receive credit for ABRG 4696: Wolastoqey Language III or INDG 4696: Wolastoqey Language III, but not both. *Prerequisites:* 6 ch in Wolastoqey Language or permission of instructor.

INDG4697 Wolastoqey Language IV 3 ch (EL)

Focus on vocabulary development, fluency in speech, literacy skills. *Students may receive credit for ABRG 4697: Wolastoqey Language IV or INDG 4697: Wolastoqey Language IV, but not both. *Prerequisites:* 9 ch in Wolastoqey Language or permission of instructor.

SECTION H: FREDERICTON COURSES

INDG4697 Wolastoqey Latuwewakon IV 3 ch (EL)

'Ciw yut wen keti ankuwi kciichtaq skicinuwatuwewakon, pciiliw eluwikhasik, wolama 'tawi olonuwatuwe. 'Ciw yukt kisi wihqhtuhtit kinaq neqciqotok cel epahsiw, kosona wolitahatok nutokehkikemit.

INDG 103N Study Skills Development I

INDG 104N Study Skills Development II

Non-Credit Makeup Courses

INDG 105N Secondary Education I: English

INDG 106N Secondary Education II: Mathematics

INDG 107N Secondary Education III: Biology

INDG 108N Secondary Education IV: Chemistry

INDG 109N Secondary Education V: Physics

INDG 110N Secondary Education VI: Economics

INTERNATIONAL DEVELOPMENT STUDIES

See beginning of [Section H](#) for abbreviations, course numbers and coding.

IDS1103 International Development and Global Inequality 3 ch (3C) (W)

Read about poverty, inequality, and injustice in a global context. Consider the dynamics that have brought the world to its current state. Evaluate what is being done in the name of international development. Topics may include war, debt, poverty, foreign aid, climate change, habitat destruction, food-security, hunger and malnutrition, globalization and the rules of trade, rural and agrarian livelihoods, and urbanization and its consequences. Consider how these factors intersect as causes of global inequality, and how to rethink conventional solutions offered in the name of international development.

IDS2103 Institutions, Practices, and Critics of International Development 3 ch (3C) (W)

Compare the key actors in international development. Analyze the practices of states, international agencies, non-governmental organizations, and community-based groups, and their attempts to foster economic growth with social justice. Evaluate how social scientists, development practitioners, and community activists have assessed and critiqued the key institutions, practices, and theories of international development. Topics may include the United Nations, the International Monetary Fund, the World Bank, the United Nations High Commissioner for Refugees, the development non-profit sector, corporate actors, as well as theories and critiques of international development, drawing on specific case studies.

IDS3903 Independent Study in International Development Studies 3 ch (R) (W)

Upon application through the Coordinator 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 3ch 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 Coordinator 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 International Development Studies 3 ch (3S) (W)

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, 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. *Prerequisite:* Any one of the following: IDS 2103, IDS 3002, IDS 3003, or permission from the instructor.

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 Hiragana 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) (EL)

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.

KIN2062 Introductory Biomechanics 3 ch (3C) (EL)

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) (EL)

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) (EL)

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.

SECTION H: FREDERICTON COURSES

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 1.5L)

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.

KIN3051 Prevention and Care of Athletic Injuries 3 ch (3C) (EL)

Covers principles and procedures for the recognition and management of injuries and disorders in physical activity, athletics and sport programs. *Prerequisite or Co-requisite:* KIN 2252 or permission of the instructor.

KIN3061 Motion Capture Biomechanics 3 ch (3C) (EL)

Examines, through lecture and in-class laboratory experiences, current biomechanical instrumentation and data analysis techniques used for quantifying human movement. Emphasis is placed on motion capture systems and synchronized devices such as force and pressure plates, and EMG. *Prerequisite:* C grade or better in KIN 2062.

KIN3065 Matlab and Python Programming for Biomechanics 3 ch (1C 2L)

Develop Matlab and Python programming skills with specific application to the field of biomechanics. *Prerequisite:* KIN 3061.

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 explore 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 relationships 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) (EL)

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.

SECTION H: FREDERICTON COURSES

KIN3161 Human Factors in Ergonomic Design 3 ch (3C) (W)

Develop an understanding of 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. *Prerequisite:* Completion of 60 ch towards BScKin degree or permission of the instructor.

KIN3166 Cognitive Aspects of Human Performance 3 ch (3C) (EL)

An examination of the cognitive processes that underlie 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.

KIN3201 Exercise Prescription 4 ch (2C 2L) (EL)

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:* Completion of 60 ch towards BScKin degree and C grade or better in KIN 2082.

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 Health Behaviours 3 ch (3C) (EL)

Examining individuals' attitudes and behaviours towards health promoting 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 encouraged and empowered to make their own positive behavioural changes in regards to health 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) (EL)

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)

Examines the science of macronutrients and micronutrients and their role in the body and in health, the digestion and absorption process, metabolism and energy balance, nutritional needs in special populations (pregnancy, infancy, adolescents, and elderly), food safety, nutrition methodology, dietary assessment and guidance, and current nutrition issues.

KIN3911/3912/3913 Practicum I 1 ch (1L) / 2ch (2L) / 3 ch (3L) (EL)

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 IV 3 ch (3L) (EL)

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.

KIN4041 Clinical Gait Analysis (A) 3 ch (3C) (EL)

Examines, through lecture and in-class laboratory experiences, clinical gait analysis using state-of-the-art techniques in motion analysis. Topics include instrumentation, atypical gait patterns, data interpretation, and treatment effectiveness. *Prerequisite:* KIN 3061; Only open to students with 60 ch towards their degree.

KIN4063 Biomechanical Instrumentation and Data Acquisition (O) 3 ch (3C)

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.

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) (EL)

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 applied and demonstrated through an opportunity to analyze a sport or exercise of choice. *Prerequisite:* KIN 2062.

KIN4074 Human Gait and Balance 3 ch (3L) (EL)

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) (EL)

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 (A) 3 ch (3C) (EL)

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) (EL)

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.

KIN4282 Advanced Exercise Prescription for High Performance 4 ch (3C 1.5L)

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) (EL)

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) (EL)

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 (A) 3 ch (3C)

Examines the role of macronutrients, micronutrients, fluids, and ergogenic aids in exercise and sport performance. Strategies for weight management and body composition modifications will be discussed. Approached from an applied biochemistry and physiology perspective through lecture and seminar. *Co- or Prerequisite:* KIN 2082 or equivalent, KIN 3481.

KIN4522 Rehabilitation Biomechanics 3 ch (3C) (EL)
(Cross-Listed: KIN 6522)

Focus on the application of biomechanics in rehabilitation research and practice, and gain knowledge on biomechanical assessments relevant to the rehabilitation field. Acquire skills for using biomechanical assessment to understand human response to rehabilitation. Gain hands-on experience through using advanced rehabilitation technologies. *Prerequisites:* KIN 2062 and KIN 3001.

KIN4601 Advanced Neuromuscular Exercise Physiology (O) (Cross-Listed: KIN 6601) 3 ch (3C)

Examination at an advanced level of neuromuscular exercise physiology through seminar and lab experiences. The focus of the seminars will be to gain an in-depth understanding of acute and chronic neuromuscular responses to different types of exercise. The lab experiences will concentrate on examining neuromuscular function, quantifying factors related to force production and examining cellular aspects of muscle physiology. *Prerequisite:* C or better in KIN 2082. Completion of 90 ch toward the BScKin degree and permission of the instructor.

KIN4800 Directed Studies in Kinesiology 6 ch (6C)

Guided by a faculty member, provides an opportunity for 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 57 ch towards BScKin degree.

KIN4900 Honours Research Project 6 ch (3C) (EL)

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 for 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 for 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) (EL)

Continuation of KIN 3913/KIN 3914. *Prerequisites:* Must have completed 48 ch and have an AGPA of at least 2.5.

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.

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

SECTION H: FREDERICTON COURSES

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 Chronic Diseases 4 ch (3C 2L) (EL)

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.

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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. *Préreqs:* 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. *Préreqs:* 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. *Préreqs:* 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. *Pré requis:* 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. *Pré requis:* 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. *Pré requis:* 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-qubécois. *Pré requis:* 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. *Pré requis:* 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. *Pré requis:* 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. *Pré requis:* 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 Calculus I: Differential Calculus 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 Calculus II: Integral Calculus 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.

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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 optimization. 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 Calculus III: Multivariable Calculus 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 Calculus IV: Vector Calculus 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 enroll.

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 Elementary School Mathematics 3 ch (3C 1L) (EL)

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 additionally recommended).

MATH3033 Group Theory 3 ch (3C)

Provides an introduction to abstract algebra via the study of group theory. Covers axioms of group theory, permutation groups, subgroups, Lagrange's Theorem, quotient groups and homomorphisms. Further topics may include the classification and structure of groups and applications to geometry, matrix algebra, or number theory. *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 enroll.

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. *Prerequisites:* MATH 2203 or CS 1303 (MATH 2203 recommended); or permission of the instructor.

MATH3103 Analysis I 3 ch (3C)

Analysis is the branch of mathematics that deals with approximation, convergence, and change. The first half of a two-term introduction to the foundations of analysis that concludes with MATH 3113. It covers the axiomatic characterization of the real numbers, metric spaces, sequences and numerical series, limits and continuity of functions. *Prerequisites:* MATH 2203 or CS 1303, and MATH 2213 or MATH 1503.

MATH3113 Analysis II 3 ch (3C)

The second half of a two-term introduction to the foundations of analysis that begins with MATH 3103. Covers differential calculus and Riemann integration on the real line, sequences and series of functions, the Arzelà-Ascoli and Stone-Weierstraß theorems, and, as time permits, theoretical foundations of classical Fourier analysis. *Prerequisite:* MATH 3103.

MATH3213 Linear Algebra II 3 ch (3C)

Linear algebra and its generalizations are at the heart of contemporary mathematics. Provides a rigorous treatment of linear algebra. Covers fields, vector spaces, bases and dimension, linear operators, inner product spaces, and canonical forms. *Prerequisite:* MATH 2203 or CS 1303 and MATH 2213 or MATH 1503 or permission 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, Möbius 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 (Cross-Listed: ECON 4673) 3 ch (3C)

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 (Church-Turing 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) (EL)

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.

SECTION H: FREDERICTON COURSES

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) (EL)

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:* 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-requisites 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.

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) (EL)

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) (EL)

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.

ME3221 Manufacturing Engineering I 3 ch (3C 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. *Prerequisites:* CHE 2501, CHE 2506, and ME 2111.

ME3222 Manufacturing Engineering I with Laboratory 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) (EL)

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 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 3 ch (3C 1T)

The performance and selection of hydraulic pumps and turbines, boundary layer theory and to the Navier-Stokes equations, 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).

ME3524 Fluid Systems and Design 2 ch (1C 1L) (W) (EL)

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.

SECTION H: FREDERICTON COURSES

Prerequisites: (ME 2413 or ME 3413), (ME 3511 or ME 3513). *Co-requisite:* ME 3522.

ME3611 System Dynamics 3 ch (3C 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 constraint, natural and damped frequency, damping ratio. *Prerequisites:* (ME 2003 or APSC 1023), (CS 1003 or CS 1073), ECE 1813, MATH 3503. *Recommended:* ECE 2711.

ME3612 Mechanical Vibration 3 ch (3C)

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 3611 and MATH 3503.

ME3613 System Dynamics with Laboratory 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 or ECE 2711.

ME3622 Automatic Controls I 3 ch (3C 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.

ME3623 Automatic Controls I with Laboratory 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.

ME3701 Mechanical Engineering Laboratory I 2 ch (3C* 3L*) (W) (EL)

Introduces various concepts of experimental measurement with accompanying laboratory exercises relevant to mechanical engineering. Topics include measurement fundamentals and sensor operating principles along with design of experiments and hypothesis testing. *Prerequisite:* ME 2413, ME 2122. *Co-requisite:* ME 3611, ME 3221.

ME3702 Mechanical Engineering Laboratory II 2 ch (3C* 3L*) (W) (EL)

Covers various intermediate concepts of experimental measurement with accompanying laboratory exercises relevant to mechanical engineering. Topics include measurement fundamentals and sensor operating principles along with design of experiments and hypothesis testing. *Prerequisite:* ME 3703, ME 3511. *Co-requisite:* ME 3433, ME 3622, ME 3612.

ME4281 Manufacturing Engineering II 3 ch (3C)

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. *Prerequisites:* (ME 2121 or ME 2122) and ME 3221.

ME4283 Manufacturing Engineering II with Laboratory 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 3 ch (3C 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). *Recommended:* ME 3433, ME 3435, ME 3522, ME 3524.

ME4424 Sustainable Energy Systems Design 2 ch (1C 2L) (W) (EL)

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 3433, (ME 3522 and ME 3524). *Co-requisite:* ME 4421.

ME4613 Mechanical Vibration with Laboratory 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) (EL)

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) (EL)

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.

ME4701 Mechanical Engineering Laboratory III 2 ch (3C* 3L*) (W) (EL)

Covers various advanced concepts of experimental measurement with accompanying laboratory exercises relevant to mechanical engineering. Topics include measurement fundamentals and sensor operating principles along with design of experiments and hypothesis testing. *Prerequisite:* ME 3702. *Co-requisite:* ME 4281.

ME4703* Mechanical Engineering Measurements 4 ch (3C 2L) (EL)

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) (EL)

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 inhomogeneous composite solids, the effective moduli theory and the elasticity of laminated and fiber reinforced 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 comprise 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

SECTION H: FREDERICTON COURSES

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*) (EL)

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) (EL)

Describes the aerodynamic forces, 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 may 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) (EL)

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.

MAAC1095 Introduction to Game Studies (A) 3 ch (3C) (W)

Explore the academic study of digital and non-digital games, with a focus on the development of a shared understanding of the history, culture, aesthetics, and importance of games and play. Achieve a better understanding and appreciation of games through lectures, discussions, written assignments, and critical play – playing games and critically analyzing them as cultural texts.

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 Game Design (O) 3 ch (3C) (W)

Explore the design 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 game design principles. Assignments may include both written work and creative media projects. No previous experience with digital games is required. *Prerequisite:* MAAC 1095 or permission of the instructor.

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 MUS 2792 and MAAC 2797.

MAAC2998 Digital Film Production I 3 ch (3C) (EL) (Cross-Listed: FILM 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 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) (EL) (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 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 Studying Culture (Cross-Listed: CCS 3021) 3 ch (3C) (W)

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 recent 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 Across Media & Cultures (A) 3 ch (3C) (W) (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: Early German Cinema (A) 3 ch (3C) (W) (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.

SECTION H: FREDERICTON COURSES

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 Documentary Media (A) (Cross-Listed: FILM 3075) 3 ch (3C)

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] (Cross-Listed: CCS 3082, FILM 3082) 3 ch (3C) (W)

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. *Prerequisite:* Open to students who have completed 45 credit hours, including MAAC 1095, 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 (Cross-Listed: MUS 3113) 3 ch (3C)

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) (Cross-Listed: CCS 3211) 3 ch (3C) (W)

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 cellphilms 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 course 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 analyze 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.

MAAC3455 Latin American Cinema 3 ch (W)
(Cross-Listed CCS/Film 3455)

Provides students with a background in Latin American cinema, emphasizing the most productive centres such as Mexico, Cuba, Brazil, and Argentina. Equal emphasis is placed on both cinematographic and thematic analysis of films studied. Cultural and historical context will be provided. Language of instruction is English. Students taking this course to fulfill a Major or Honours requirement in Spanish must submit required work in Spanish. Students who have taken WLCS 3455, or SPAN 3455 may not attain credit for CCS 3455. Prerequisites: 30 credit hours of university courses.

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.

MAAC3675 Games for Change (A) 3 ch (3S) (W) (EL)

Examine how games can be designed for purposes beyond entertainment, such as art, education, social critique, activism. Following a project-based format, all students conceive and design their own game for change. *Prerequisite:* Open to students who have completed 45 ch or with permission of the instructor.

MAAC3772 Film Directors (A) (Cross-Listed FILM 3772) 3 ch (3S) W

Provides a concentrated study of the work of selected major directors of narrative, documentary, and experimental cinema. Concepts and theories of authorship are incorporated into close analysis of selected bodies of work. The films are considered in terms of thematic and stylistic consistency and variation as well as biographical, social, and political factors. *Prerequisite:* MAAC/FILM 2022.

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 Zamyatin, 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) (EL)
(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 Senior Seminar in Popular Culture (A) 3 ch (3S) (W)
(Cross-Listed: CCS 4021/5021)

Seminar focusing on theoretical approaches to the study of popular culture. Topics and theories covered may rotate from year to year. *Prerequisites:* 60 ch of courses including MAAC/CCS 2021, or permission of the instructor. MAAC 5021 is normally open only to Honours students. Students may only obtain credit for one of MAAC 4021 or MAAC 5021.

MAAC4025 Senior 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 digital inequalities, access and activism. *Prerequisites:* 60 ch of courses including MAAC/CCS 2021, or permission of the instructor. MAAC 5025 is normally open only to Honours students. Students may only obtain credit for one of MAAC 4025 or MAAC 5025.

MAAC4056 Senior Seminar in Queer Futurities (A) 3 ch (3S) W
(Cross Listed CCS 4056)

Examine the literature on queer futurities from a variety of perspectives including queer ecologies, disability studies, and critical race theory. Explore queer world building, collective knowledge, and community care

SECTION H: FREDERICTON COURSES

practices. Topics and theories may include: Afrofuturism, Indigenous futurism, feminist utopias, queer temporalities, queer epistemologies, and queer joy. *Prerequisite:* 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 (EL)

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.

MAAC5021 Honours Seminar in Popular Culture (A) 3 ch (3S) W **Cross-Listed: CCS 5021)**

Seminar focusing on theoretical approaches to the study of popular culture. Topics and theories covered may rotate from year to year. *Prerequisites:* 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor. MAAC 5021 is normally open only to Honours students.

MAAC5025 Honours 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 digital inequalities,

access and activism. *Prerequisite:* 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor. MAAC 5025 is normally open only to Honours students.

MAAC5056 Honours Seminar in Queer Futurities (A) 3 ch (3S) W **(Cross-Listed: CCS 5056)**

Examine the literature on queer futurities from a variety of perspectives including queer ecologies, disability studies, and critical race theory. Explore queer world building, collective knowledge, and community care practices. Topics and theories may include: Afrofuturism, Indigenous futurism, feminist utopias, queer temporalities, queer epistemologies, and queer joy. *Prerequisite:* 60 ch of university courses including MAAC/CCS 2021, or permission of the instructor. MAAC 5056 is normally open only to Honours students.

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. *Prerequisite:* MUS 2123 or equivalent, or permission of the instructor.

MUS2797 Rock and American Popular Music (Cross-Listed: MAAC 2797) 3 ch (3C)

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 MAAC 2797 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) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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 (Cross-Listed: MAAC 3113) 3 ch (3C) (EL)

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 the Oceans (Cross-Listed: CCS 3123) 3 ch (3C) (W)

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) (EL)

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) (O) 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 Periods (A) (Cross-Listed: HIST 3765) 3 ch (3C) (W)

Introduction to music between 800 and 1600, studying representative styles and putting this music in a historical perspective.

SECTION H: FREDERICTON COURSES

MUS3775 History of Music in the Late Baroque and Classical Period (A) (Cross-Listed: HIST 3775) 3 ch (3C) (W)

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: Canadian Jazz, Popular and Classical Music, 1950 to the Present (A) 3 ch (3C) (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, BNAP 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.

NURS1121 AP 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 AP Helping Relationships 3 ch (3C)

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 AP Enhancing Well-Being in Situations of Chronicity 3 ch (3C)

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 AP Practicum: Wellness and Chronicity 3 ch (3L) (EL)

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 AP Health Assessment 4 ch (3C 1L) (EL)

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) (EL)

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.

NURS1236 Introduction to the Care of the Older Adult 3 ch (3C)

Addresses the anticipated physiological and psychological changes related to ageing and explores the impacts of the social determinants of health on the health and well-being of older adults and their families. Guides reflection on students' own views of ageing and develops a beginning understanding of gerontological nursing as an area of specialization. Fosters understanding that Registered Nurses have a role in the promotion of the health and well-being of the older adults across care contexts.

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 (4C) (EL)

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) (EL)

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 AP Pharmacotherapeutics 4 ch (4C)

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 3 ch (3L) (EL)

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 AP 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 AP Clinical Practicum: Young Families 3 ch (3L) (EL)

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 AP Clinical Practicum: Mental Health 3 ch (3L) (EL)

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) (EL)

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 4 ch (4L) (EL)

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 AP Clinical Practicum: Acute Health Challenges 4 ch (4L) (EL)

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 4 ch (4L) (EL)

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 Introduction to Research and Evidence Informed Nursing Practice 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.

NURS3145 Advanced Therapeutic Communication 3 ch (2C 1L)

Building on a foundation of therapeutic communication, develops advanced communication skills and beginning counselling skills to further develop abilities to establish advanced therapeutic relationships when working with individuals and groups using a Trauma and Violence Informed (TVI) lens across the lifespan. *Prerequisite:* NURS 2145 or completion of the LPN Pathway.

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 AP Clinical Practicum: Nursing Families in Complex Situations 5 ch (5L) (EL)

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) (EL)

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.

SECTION H: FREDERICTON COURSES

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.

NURS4145 Mental Health Nursing in Complex Situations 3 ch (3C)

Develops skills for the assessment, planning, delivery, and evaluation of evidence informed care for clients and families across the lifespan experiencing complex mental health challenges. Critical theory and Trauma and Violence Informed (TVI) approaches will be used to frame content. *Prerequisite:* NURS 3145.

NURS4153 Preceptorship 12 ch (12L) (EL)

A preceptored clinical experience developed in collaboration with the student. *Prerequisite:* All previous Courses in the BN degree program. *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:* All previous Courses in the BN degree program. *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

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 (O) 3 ch (C)

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.

PHIL2501 Philosophy and Film (O) 3 ch (C) (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)

Examine moral problems arising in business. Become familiar with ethical theory and its relevance for business decision making. **NOTE:** students can receive credit for only one of PHIL 2203 and PHIL 3204. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor. *Prerequisite:* Students enrolled in the Faculty of Management 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 (Siddewick, 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)

Investigate a variety of issues concerning the environment, including: 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. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

PHIL3207 Health Care Ethics (Online) 3 ch

Become familiar with ethical theory and its application to contemporary issues in bio-ethics. Topics can include: 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. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

SECTION H: FREDERICTON COURSES

PHIL3208 Ecological Ethics (Online) 3 ch
Explore 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. Become familiar with a range of perspectives and positions commonly found in Western environmental debates, with emphasis on the relationship between theory and practice. Note: Students can receive credit for only one of PHIL 2206, PHIL 3206, and PHIL 3208. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

PHIL3209 Health Care Ethics in Canada 3 ch (3C) (W)
Examine ethical issues raised by problems in bio-ethics, such as experimentation with human subjects, euthanasia, assisted suicide, 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. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

PHIL3211 Cyber Ethics (O) 3 ch (3C) (W)
Examine a rapidly emerging field of applied ethics concerning issues such as autonomous weapons systems, digital intelligence gathering, cyberwarfare, block chain technology, and digital health. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

PHIL3261 Military Ethics (O) 3 ch (W)
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"? Are ambushes and espionage ethically permissible? How should ethics account for emerging technologies such as drone warfare? Consider these questions through classical texts and contemporary problems. **NOTE:** Students can receive credit for only one of PHIL 2208 and PHIL 3261. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor.

PHIL3262 Applied Professional Ethics 3 ch (3C) (W)
Administrators can be found in government, NGOs, schools, hospitals, the armed forces, for-profit businesses, etc. The course strives to address two key questions: "What responsibilities do these administrators have to others?" and "Why do they have such responsibilities?" Analytical methods presented in the course help to answer these questions. Students will be expected to understand the justification for each of these methods, be able to 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. 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. **NOTE:** Students can receive credit for only one of PHIL 2251, PHIL 3251, and PHIL 3262. While this course is open to all students, only one upper division course in applied ethics (PHIL 3204, PHIL 3206, PHIL 3207, PHIL 3208, PHIL 3209, PHIL 3211, PHIL 3261, PHIL 3262) counts towards the major or Honours requirements, without permission of the chair or advisor. *Prerequisite:* 3 ch in Philosophy or permission of the instructor.

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 of Postmodernism 3 ch (3C) (W)
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 method 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 Übermensch, the Revaluation of all Values, the Master Race, and Eternal Recurrence. Open to 2nd year students and above.

SECTION H: FREDERICTON COURSES

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: The Birth of the Prison (O) 3 ch (W)

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 Nancy 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 (A) 3 ch (3C) (W)

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 Intercession/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 [Section H](#) 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-inertial 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 apparatus (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

SECTION H: FREDERICTON COURSES

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.

PHYS2342 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 Schrödinger 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.

PHYS3321 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) (EL)

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.

PHYS3371 Optics 3 ch (3C)

Role within Program and connections to other courses: Optics is of immense practical importance. Optical phenomena provide a direct connection between the macroscopic world and the microphysics behind it. Includes application of theoretical concepts introduced in electromagnetic theory and quantum mechanics. Serves as the foundation for later courses in the Optical Engineering stream of the Engineering Physics program. *Content:* Models of microscopic behaviour relevant to understanding optical phenomena: geometric optics, physical optics, electromagnetic theory, quantum mechanics. Topics may include radiometry, imaging, colour and spectra, polarization, coherence, interference, diffraction, the scattering/wavelet model, and the formalisms explaining them. Lectures may also include demonstrations and experiments to support the material. *Prerequisite:* PHYS 2372. *Co-or prerequisite:* PHYS 3321

PHYS3431 Space Systems Design I 3 ch (3C)

Role within programme and connections to other courses. An introduction to systems design with an emphasis drawn from space missions. *Content.* Requirements development, trade studies, the project life cycle, system hierarchy, risk analysis, and cost analysis. Topics may include: team working, background mathematics, project lifecycle and requirement, design, optimization, cost, monitoring. *Prerequisites:* PHYS 2311, PHYS 2342, PHYS 2351, ECE 2722, MATH 3503. *Co-requisites:* PHYS 3321, PHYS 3481.

PHYS3432 Space Systems Design II 3 ch (3C)

Role within programme and connections to other courses. Details of spacecraft design and development, including typical mission requirements, such as payload and orbit determination, and how these determine choices for the main spacecraft sub-systems and overall spacecraft design. Uses, in connection with the Design Lab, computer-aided design (CAD), numerical modeling and simulation of space systems, the finite element method, and the finite difference method. *Content.* Subsystems such as power, telemetry, command and control, communications, and thermal control. Mission components such as estimation of the power budget, and different types/classes of satellites and launch vehicles. *Prerequisites:* PHYS 3431. *Co-requisites:* PHYS 3437, ECE 3232, ECE 3312.

PHYS3437 Space Systems Design Lab 3 ch (3L) (EL)

Role within programme and connections to other courses. A simulation and design studio lab in which students will learn to develop and simulate fundamental principles used in the engineering and design of space systems. Students will be using CAD and numerical simulation concepts to design and test different subsystems of a space mission and assemble them properly. The students will also simulate spacecraft guidance, navigation, and control. The lab will introduce students to simulation tools for mission design methodologies, systems engineering, optimization, sensing, estimation, and control. These concepts will be applied to the design and development of a CubeSat using commercially available components. *Prerequisites:* PHYS 3481, PHYS 3431. *Co-requisites:* PHYS 3432.

PHYS3452 Laser Physics 3 ch (3C)

Role within programme and connections to other courses. Lasers are ubiquitous in modern technology, from barcode scanners in stores, land

survey equipment, to modern communication systems. Provides the theoretical basis for understanding this revolutionary device and reviews various types of lasers and their applications. *Content.* Electromagnetic waves in resonant cavities, two-level systems, spontaneous and stimulated processes, light amplification, inhomogeneous broadening, properties of lasers such as intensity, polarization, beam waist, wavefront curvature, line shape, and noise sources, Gaussian beams and their propagation, ABCD matrices, and higher-order TEM modes. Additional topics may include an overview of non-linear optical processes such as second-harmonic generation and four-wave mixing. *Prerequisites:* PHYS 3321, PHYS 2351, PHYS 3351, PHYS 3371, MATH 3503. *Co-requisite:* PHYS 4322.

PHYS3481 Space Environment 3 ch (3C)

Role within programme and connections to other courses. An introduction to the space environment and its impact on space system design, performance, and lifespan. *Content.* The neutral atmosphere, ionized atmosphere, gravity field, magnetic field, foreign objects, radiations, and orbital perturbation caused by these factors. Examples of topics are the atmospheric drag in the lower Earth orbit, inconsistencies in the Earth's gravitational field, the effect of radiation on a spacecraft and space mission, the effect of radiation on electronics, and the way the magnetic field of the Earth interacts with space radiation. *Prerequisites:* PHYS 2311, PHYS 2342, PHYS 2351, ECE 2722. *Co-requisites:* MATH 3503, PHYS 3321, PHYS 3431.

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 offering, 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.

SECTION H: FREDERICTON COURSES

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 (10^{23} 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.

PHYS4322 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) (EL)

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.

PHYS4421 Radars and Antennae 5 ch (5C/L)

Role within programme and connections to other courses. Introduces basic radar concepts and antenna theory. *Content.* Basic antenna theory, types of antennas for space applications, estimation of the antenna gain and radiation patterns, antenna selection and design, the radar equation and examples of radar. Radar cross-section, waveform design, antennas, and transmitter and receiver characteristics are discussed. The effect of noise in the detection of the signal and propagation effects such as attenuation, multi-path effects, and ducting are described. Ends by connecting different types of radars to different types of antennas through impedance matching and maximum power transfer concepts. *Prerequisites:* PHYS 4322, MATH 3503, ECE 3511.

PHYS4438 Engineering Physics Design Project 8 ch (W) (EL) (Cross-Listed: ENGG 4000)

Role within programme and connections to other courses. The capstone project of the engineering physics program. Students are to research and propose a design project that addresses a real-world problem by creating

an engineering system, process, or device. Students are expected to work in small teams, exercise creativity, and make decisions based on the knowledge and technical skills they have developed throughout the program. This two-semester course is split into two parts. During this first part of the course, students will define and plan the project, and analyze the design using mathematical modeling. *Prerequisites:* ECE 3312, PHYS 4322, PHYS 3452 or PHYS 3432, registration in the final year of Engineering Physics and consent of their supervisor. *Co-requisites:* PHYS 4823, PHYS 4476 or PHYS 4421.

PHYS4476 Optical Systems Design 5 ch (5C/L)

Role within programme and connections to other courses. Lasers and other light sources are rarely used as standalone instruments. They are almost always coupled to several different devices that form an optical system for performing specific tasks. Provides a comprehensive overview of these optical devices, how they work, and what they're typically used for. *Content:* Passive devices such as lenses, beam splitters, polarizers; active components such as acousto-optic and electro-optic modulators. Anti-reflection coatings, birefringence, and temperature sensitivity. The comprehensive laboratory component applies the concepts learned in the classroom component to design and construct various optical systems. Students cycle through different experiments that will give them hands-on training with lasers, electronics, and optical instrumentation. Students will also learn how to use optical design software to perform ray tracing and evaluate different optical elements. This software will be an essential part of their future design project. *Prerequisites:* ECE 3311, PHYS 3452, PHYS 3336. *Co-requisites:* PHYS 4823 or equivalent with permission from course instructor.

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) (EL)

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
(Cross-Listed: MATH 4443) 3 ch (3C)**

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)
(Cross-Listed: MATH 4483) 3 ch (3C)**

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.

SECTION H: FREDERICTON COURSES

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 in Historical Context (O) 3 ch (3C) (W)

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.

POLS1903 Introduction to Politics (A) 3 ch (3C) (W)

Introduce the principle concepts, ideas, issues, and frameworks used in the major areas of study in Political Science including political theory, Canadian politics, public administration, comparative politics, and international relations. Attention will be paid to events and examples in Canada as well as from other countries and regions.

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.

POLS2101 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.

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.

POLS2403 Political Theory into the Present 3 ch (3C) (W)

Examine key themes and concepts in modern political theory, including democracy, human rights, individualism, freedom, populism and oppression through an exploration of traditional thinkers and those recently rediscovered writers who were ignored by past commentators.

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 Industrialized World 3 ch (3C) (W)

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 (Cross-Listed: HIST 3011) 3 ch (3C)

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 (Cross-Listed: HIST 3012) 3 ch (3C)

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.

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.

POLS3216 Pathways to Policies 3 ch (3S) (W) (EL)

Explore data-informed decision making. Work in teams to solve a real-world, New Brunswick-based problem while developing intra-personal and professional skills. Using publicly available data, and with course content that supports their problem-solving process, work towards creating unique solutions and recommendations for presentation to a group of stakeholders from university, government, and industry.

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.

POLS3234 Issues in North American Politics (A) 3 ch (3S) (W)

Examine the history and current state of relations in North America, focusing on the dynamics of regional integration including economic and political, culture and social, and security and border relations. The multilateral relationship of Canada, the United States, and Mexico will be considered through a comparative perspective.

POLS3237 Politics of Memory (O) 3 ch (3C)

Examines the politics of memory in different national contexts. What is remembered and how it is remembered is necessarily political. Topics include colonialism, slavery, war, 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.

POLS3403 The Tradition of Political Theory (A) 3 ch (3C) (W)

Provide a critical survey of the leading figures in the tradition of political thought. Thinkers examined may include Plato, Aristotle, Hobbes, Locke, Wollstonecraft and Marx. Themes explored will range from the treatment of nature and the question of political virtue in ancient thinkers through to questions about sovereignty and political emancipation in modern writers.

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, Horkheimer, 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: Politics of the Early Modern World (O) 3 ch (3C) (W)

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)

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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: Political Critique in Literature (O) 3 ch (3C) (W)

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) (EL)

Introduces students to qualitative research methods used in political science. Provides students with theoretical and practical knowledge about the research process including the development of a research question, the selection of a research design, data collection and data analysis methods, and how to conduct rigorous and ethical research.

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.

POLS3723 Global Political Economy (A) 3 ch (3S) (W)

Introduces students to the intertwined and relationship between politics and economics in the world arena. Provides a historical and conceptual survey of the complex relationship between political authority and the production and distribution of global wealth. Emphasis is on the fundamentals of global political economy (GPE), theoretical perspectives, history and development, and issues such as economic development, globalization, regimes, global debt, hunger, the environment, and the future for leadership in the international system.

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: Historical and Contemporary Perspectives (O) 3 ch (3S) (W)

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*.

POLS4516 Contentious Politics 3 ch (3S) (W)

Explore the politics of state-society relations using a comparative perspective. Examine the emergence of social mobilization, strategies of action, and their impact on government policy and politics. Topics include identity, environmental, and morality politics.

POLS4704 Security and Insecurity in Global Politics 3 ch (3S) (W)

Consider the broadening understanding of security and insecurity in global politics from traditional ideas of sovereign protection and defence to contemporary questions of what causes insecurity in the first place. Topics include arms races and war, human security, non-state actors, terrorism, and environmental concerns.

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 Global Politics of Infectious Disease 3 ch (3S) (W)

Explore the global political forces, relations, and actors that shape the drivers of and responses to infectious disease. Topics include global pandemics (e.g. COVID), regional epidemics (e.g. Ebola), and endemic disease (e.g. malaria). Other infectious diseases and issues considered may include HIV/AIDS, neglected tropical diseases, and antimicrobial resistance. Particular attention is given to health equity. Gain advanced understanding of: the political forces that produce uneven global infectious disease impacts by region, race, gender and sexuality; the health equity impacts of infectious disease responses grounded in health security, One Health, or right to health approaches; the extent to which global health governance mechanisms able to address the inequities that are both cause and consequence of infectious disease outbreaks.

Recommended prior course: POLS 2303, POLS 2703, IDS 2103 or permission of course instructor.

POLS4728 Economics & Politics of Health Care Reform (A) 3 ch (3S) (W)

Examine the evolution of Canadian Medicare, the structures of what is covered by public payment and what is not, the organization of delivery of health care services, the fiscal and access challenges of the system with an aging population and technological drivers of service volumes and system costs, and the known directions for reform. Compare Canadian health care finance and service delivery, and health outcomes, to other countries and identify known solutions for the challenges to health care in Canada. Present the economics of health care reform as part of understanding the political barriers to reforming health care.

POLS4734 Political Economy of Energy and the Environment (A) 3 ch (3C) (W)

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) (EL)

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) (EL)

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.

SECTION H: FREDERICTON COURSES

PSYC2103 Quantitative Research Methods 3 ch (3C) (W) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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) (EL)

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.

PSYC3093 Positive Psychology (A) 3 ch (3C)

Become familiar with the scientific study of psychological well-being and human flourishing, with a focus on what makes people optimistic, hopeful, motivated and happy. Examines the core concepts of positive psychology, as well as the scientific evidence of what makes people happy, and explores the practical knowledge and applications of how positive psychology contributes to thriving among individuals and their communities. *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 Experimental Psychology 3 ch (3C 1L) (LE)

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) (EL)

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) (EL)

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:* PSYC 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) (EL)

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:* PSYC 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) (EL)

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) (EL)

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 addictions. 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) (EL)

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) (EL)

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) (EL)

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.

SECTION H: FREDERICTON COURSES

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) (EL)

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; functional 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 program. 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. *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 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 Behaviour 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 of Behaviour Science 3 ch

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 gerontology. *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 electrophysiological 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, psychogenics 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) (EL)

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) (EL)

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 Developmental Psychology (O) 3 ch (3S) (W)

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) (EL)

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 intervention 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/ Independent Study I 6 ch (EL)

A field placement for students that combines formal education with community service by providing work experience useful for the career and professional profile. Students are required to complete 65 hours a month of practical experience in Applied Behaviour Analysis. 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. Learn and practice the basics of behaviour intervention implementation and behaviour assessment. Graded on a CR/NCR basis. **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/ Independent Study II 6 ch

A field placement for students that combines formal education with community service by providing work experience useful for the career and professional profile. Students are required to complete 65 hours a month of practical experience in Applied Behaviour Analysis. 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. Learn and practice writing and implementing individualized behaviour intervention plans based on the results of assessments. Graded on a CR/NCR basis. *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 / Independent Study III 6 ch

A field placement for students that combines formal education with community service by providing work experience useful for the career and professional profile. 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. Implement and monitor individualized behaviour intervention plans, manage cases, and learn competency-based training procedures. Graded on a CR/NCR basis. *Prerequisites:* PSYC 4535. Available only to students enrolled in the certificate program.

PSYC4603 Topical Seminar in Learning, Memory and Cognition (O) 3 ch (3S) (W)

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:*

SECTION H: FREDERICTON COURSES

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 Section H 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) (EL)

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 Print & Digital Publishing 3 ch (3C) (W)

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 Wellness Organizations 3 ch (3C) (W)

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.

RSS2223 Community Development 3 ch (3C) (EL)

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) (EL)

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 and Recreation (A) 3 ch (3C) (W)

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.

RSS3100 Professional Internship 12 ch (W)

Complete a full-time one-term placement or a part-time two-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, reflections on the experience, and a presentation. Note: Part-time, two-term placements must begin in the Fall term and be completed in the Winter term. *Prerequisites:* RSS 2032, RSS 2061, RSS 2223, RSS 3001, KIN 3093. Credit cannot be received for both RSS 3106 and RSS 3100.

RSS3106 Professional Internship 6 ch (W) EL

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, reflections on the experience, and a presentation. Note: The professional internship may be completed in one academic term (fall, winter, or summer) or across two consecutive academic terms in the fall and winter. *Prerequisites:* RSS 2032, RSS 2061, RSS 2223, RSS 3001, KIN 3093. Credit cannot be received for both RSS 3106 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) (EL)

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) (EL)

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, Sport and Wellness Organizations 3 ch (3C)

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.

SECTION H: FREDERICTON COURSES

RSS4081 Marketing and Sponsorship in the Recreation and Sport Industry 3 ch (3C) (W)

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) (EL)

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 (EL)

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 for 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 for 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 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)

Examines how gender as a social construct and other intersecting identities (sexuality, race, ethnicity, socioeconomic status, ability) influence the leisure and sport opportunities and experiences individuals and families have within structures and systems of privilege and oppression. Develops an ability to use a gender and intersectionality lens when analyzing current issues and controversies related to leisure and sport. Values students' lived experience as knowledge to be situated within theoretical and empirical contributions. Uses case studies and current event examples to support application and integration of learning. *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 for 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) (EL)

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) (EL)

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 Recreation and Sport Organizations (A) 3 ch (3C)

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) (EL)

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) (EL)

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) (EL)

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 Cultivating Wellbeing 3 ch (3C/S) (W) (EL)

Introduces the art and science of cultivating wellbeing and emphasizes the interconnectedness between its individual, social and planetary dimensions. Strategies and practices for wellbeing are discussed in the context of self-mastery and cultivation of the self in leadership. Within this context, the exploration of wellbeing focuses on fostering capacity for authenticity, integrity, equanimity, positive relationships, resilience, and compassion. Learning activities are designed to identify and strengthen behaviors and habits that contribute to enhanced wellbeing at an individual and community level, and develop wellbeing strategies sensitive to the issues of sustainability, ecology and social justice.

RCLP1052 Quantitative Approaches to Problem-Solving 3 ch (3C/S) (W) (EL)

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) (EL)

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) (EL)

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 Project Management in Community 3 ch (3C/S) (W) (EL)
Context

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) (EL)

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.

RCLP2023 Canadian Internship 12 ch (EL)

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.

RCLP2046 International Internship Preparation 0 ch (0C/S) (EL)

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) (EL)

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) (EL)

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) (EL)

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 existing leadership challenge within an organization of their choice, research and assess existing approaches for addressing the challenge, and create a project report detailing the results, including applicable recommendations.

RCLP3043 Science and Society (A) 3 ch (3C/S) (W)

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.

RCLP3046 International Internship 12 ch (W) (EL)

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 activities 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) (EL)

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 leadership 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.

SECTION H: FREDERICTON COURSES

RCLP4010 Systems Thinking 3 ch (W)

Introduces systems thinking as an ontological approach to analyzing societies, organizations, and leadership situations. Examines how systems thinking has influenced the natural and social sciences, and what its implications are for the study of leadership. Systems-based analytical tools are introduced and applied to investigating systems that are at the root of persistent challenges affecting the globe today, such as climate change, homelessness and racism.

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.

RCLP4012 Ethics of Leadership 3 ch (W) (EL)

Introduces a variety of ethical theories and their application to the role and challenges of leadership. Examines key limitations of the human mind in high-stakes, high-stress decision-making contexts, and provides practice in ethical analysis and decision-making as it applies to private, workplace-based, and public life, with the help of an ethical decision-making tool.

RCLP4028 Community Problem-Solving and Research Project 6 ch (6C/S) (W) (EL)

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 as 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.

RCLP4043 Interdisciplinary Leadership Seminar 3 ch (3C/S) (W) (EL)

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) (EL)

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.

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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 apocalypticism; 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 Literature in Translation (Cross-Listed: WLCS 3051) 3 ch (3C) (W)

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 Literature in Translation 3 ch (3C) (W)

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 20th Century Russia and Spain (O) 3 ch (3C) (W)

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 Gorbanevskia, 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.

SCI1911 Climate Change Science 3 ch (3C)

Introductory exploration of the scientific principles underlying climate change, focusing on the causes, impacts, potential solutions, the interplay between biology and climate change, and the ecological consequences of warming temperatures. Students will develop an understanding of the Earth's climate system, the role of human activities in driving climate change, and the scientific methods used to study and predict climate trends. Through lectures, discussions, and hands-on activities, students will gain the knowledge and skills needed to critically assess climate science research and the biological implications of climate change.

SCI2003 Co-op/WIL Work-term Report I 0 ch (W)

A written and/or oral report on the scientific activities of a Co-op or other 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. Graded on a CR/NCR basis.

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.

SCI3003 Co-op/WIL Work-term Report II 0 ch (W)

A written and/or oral report on the scientific activities of a second Co-op or other 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. Graded on a CR/NCR basis. *Prerequisite:* SCI 2003 or equivalent.

SCI4003 Co-op/WIL Work-term Report III 0 ch (W)

A written and/or oral report on the scientific activities of a third Co-op or other 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. Graded on a CR/NCR basis. *Prerequisite:* SCI 3003 or equivalent.

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 on the student transcript when they are away on a Science Co-op Work Term, and the name of the employer. A student additionally gains a credit from either the Faculty or a science department for completion of a subsequent work-term report.

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 Memory in the Photographic Era 3 ch (W)

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

Examine aspects of youth in contemporary Western societies such as identity and sub-cultures, sexual behaviour, music, consumerism, religion, education, employment, crime and violence; as well as other issues affecting youth and their transitions to adulthood. Highlight the sociological connections between an individual's personal world and the social world through sociological perspectives and approaches.

SOCI1543 Gender - Then and Now 3 ch (W)

Explore how life is gendered from the moment of birth. Children are exposed to a variety of gendered messages through various media. The choices, opportunities, and obstacles that we face as adults are in large measure built upon these messages. Strategies for identifying the gendered nature of work, leisure, advertising, parenting, and aging are 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) (EL)

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

SECTION H: FREDERICTON COURSES

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)

Explore the subject matter of criminology and its relationship to other academic disciplines. Examine concepts and terms commonly used in criminology, the relationship between theory and practice, the history and evolution of criminological thought, and methods of investigation into criminal behaviour. The practical applications of criminology and the foundations of a modern criminal justice policy are also discussed. **NOTE:** Credit can be obtained for only *one* of CRIM 1603, SOCI 1603 and SOCI 3603.

SOCI2001 Introduction to Family Violence Issues (Cross-Listed: FVI 2001) 3 ch

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)

Examine issues associated with cyberviolence, the crimes that fall under the umbrella of cyberviolence, and online intervention strategies. Cyberviolence is a growing means of perpetrating interpersonal gender-based violence. Consider relevant theories, existing research and student experiences of online communication. Typically offered online. **NOTE:** Credit can only be obtained for *one* of FVI 2003 and SOCI 2003.

SOCI2009 Human Trafficking (Cross-Listed: CRIM 2009, FVI 2009) 3 ch

Situate human trafficking as a crime stemming from gender-based violence and intersecting structural inequalities. Critically reflect on positionality and experiences. Identify stereotypes as well as victim-blaming in media representations and public discourses. Learn about and assess state and community responses to human trafficking. Typically offered online. **NOTE:** Students may obtain credit for only one of SOCI 2009, CRIM 2009, or FVI 2009.

SOCI2014 Racism 3 ch (WEB)

Examine the idea of race and the roots of racism, the historical and cultural manifestations of racism, and the impact of racism on societies across the globe. Learn the intersectionality of race, class, and gender, and the phenomenon of racist violence. This is an online course.

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)

Examine the social nature of health and illness and look at medicine as an institution of social control. Cover topics such as models of health, the social production of disease, stigma and chronic illness/disability; the pharmaceutical industry; as well as issues impacting on health including sexism and racism.

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) (EL)

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 (Cross-Listed: CRIM 2663) 3 ch (W)

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 People who Batter (Cross-Listed: FVI 3006) 3 ch (W)

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 (Cross-Listed: FVI 3007) 3 ch (W)

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 Sociological Theory 3 ch (W)

Examine the major developments in late 20th century sociological theory: the critique of functionalism and the rise of conflict theory; feminist theory 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

Cover approaches the processes and outcomes of program evaluation and initiatives. Emphasize the development and 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 (EL)

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.

SOCI3262 Sociology of Sport 3 ch

Examine how sport operates as a site of social relations shaped by structural forces rather than simply as an arena of play. Emphasis is placed on how inequalities (i.e., gender, race, sexuality) and labour exploitation are produced and reproduced in athletic contexts. No background in sociology is necessary.

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 (W) (EL)

Develop a sociological understanding of issues and challenges related to living with chronic illness and disability in contexts such as the family, education, health care and the workplace.

SOCI3371 The Institution of Health Care 3 ch (W) (EL)

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 legitimization 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.

SOCI3383 Punishment and Prisons (Cross-Listed: CRIM 3383) 3 ch (W)

Explore theories of punishment, the history of prisons, and the rise of risk management. Critically examine patterns and experiences of punishment and their intersections with class, gender, racism, and colonialism. Consider the social, political, and economic effects of institutionalized and community-based punishment. With a focus on the Canadian context, examine contemporary issues and topics such as abolitionism, the school-to-prison pipeline, and privatization. **NOTE:** Credit can only be obtained for *one* of SOCI 3383 and CRIM 3383. *Recommended:* 3 ch in Sociology or Criminology and Criminal Justice.

SOCI3385 Sociology of Policing and Security (Cross-Listed: CRIM 3385) 3 ch (W)

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.

SECTION H: FREDERICTON COURSES

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 involving 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. **NOTE:** Credit can only be obtained for one of SOCI 3667 and CCS 3667. *Prerequisite:* 30 ch or permission of the instructor.

SOCI3668 Women, Creativity, and Nonviolence Across 3 ch (3C) (W) Cultures I (Cross-Listed: CCS 3668 and FVI 3668)

Examines the creative contributions women make to the resolution of conflicts through nonviolent means. 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. Focus on the creative impact of women and their success in building peace through nonviolent means, and study how and why gender matters in the contemporary world. **NOTE:** Credit can only be obtained for *one* of CCS 3668 and SOCI 3668. *Prerequisite:* Open to students who have completed 30 ch of university courses or by permission of the instructor.

SOCI3669 Women, Creativity, and Nonviolence Across 3 ch (3C) (W) Cultures II (Cross-Listed: CCS 3669 and FVI 3669)

Explore the contributions, activism, and methods of outstanding women who have had an impact on creating more peaceful communities and nations through their involvement in the arts, society, and culture. From Liberia (Leymala Gbowee) to Yemen (Tawakkul Karman) and Kashmir (Bracha Ettinger), examine the theme of peace from different worldviews. **NOTE:** Credit can only be obtained for *one* of CCS 3669 and SOCI 3669. *Prerequisite:* Open to students who have completed 30 ch of university courses or by permission of the instructor.

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.

SOCI4266 Sex Gender and Population Health 3 ch

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 theory and data for considering when biological differences as well as society create differences. **NOTE:** Some background in the basics of quantitative and qualitative data for social research is advised.

SOCI3801 Food Studies (Cross-Listed: ANTH 3801) 3 ch (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.

SOCI4021 Critical Issues in Health 3 ch

Synthesize knowledge and practice transferrable communication skills through creating and presenting a research poster of a critical issue in health that demonstrates understanding of this issue from the perspectives of at least three different disciplines, using information learned in upper-level Socio-Cultural Studies in Health courses. **NOTE:** This course may only be taken for credit by students enrolled in the Socio-Cultural Studies in Health program.

SOCI4022 Quantitative Research Methods for the Social Sciences 3 ch (W)

Experience in-depth learning of quantitative research methods in the social sciences. Develop quantitative research designs to answer a research question. Learn about sampling: primary data collection with standardized instruments; and data analysis with descriptive and inferential statistical methods. Prepare a standardized questionnaire and interviews; choose between statistical analytical methods for primary and secondary data; and interpret and write about results. *Prerequisite:* Students must successfully complete SOCI 2022 or an equivalent introductory statistics course before taking SOCI 4022 or must first obtain permission of the instructor.

SOCI4122 Answering Questions with a Statistical Package for Social Sciences 3 ch

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 (Cross-Listed: CRIM 4301) 3 ch (W)

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 (Cross-Listed: CRIM 4337) 3 ch (W)

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.

SOCI4338 Family Law and Family Violence 3 ch (WEB) (Cross-Listed: CRIM 4338, FVI 4338)

Examine the challenges faced by victims of family violence in family law processes, the protections in place for victims of family violence, and the options available for resolving legal disputes when family violence is present. Consider the unique needs of vulnerable groups and the importance of collaborative approaches to safety for survivors of family violence. Offered online only across all course codes. *Prerequisite:* 3ch in Family Violence Issues, Sociology, or Criminology. **NOTE:** Students may obtain credit for only one of FVI4338, CRIM4338, or SOCI4338.

SOCI4359 Intersecting Violences: Global Perspectives 3 ch (WEB) (Cross-Listed: CRIM 4339, FVI 4339)

Explore how gender, power, and violence are linked. Discover root causes and social factors that contribute to gender-based violence. Analyze macro-level power constructs such as colonization, systemic racism, and misogyny alongside micro-level expressions of interpersonal

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violence. Learn about community-based efforts to end cycles of violence and implement dynamic approaches to individual and community healing. Offered online only across all course codes. Prerequisite: 3ch in Family Violence Issues, Sociology or Criminology. **NOTE:** Students may obtain credit for only one of FVI4339, CRIM4339, or SOC4339.

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.

SOCI4383 Colonialism, Racism, and Law 3 ch (W)

Examine the relationships between colonialism, racism, and law through an interdisciplinary engagement with critical race, anti-colonial, Indigenous, and feminist perspectives. Interrogate the role of law as a mode of governance in constituting colonial, racialized, gendered, classed, and sexualized subjectivities. Explore debates around the possibilities and the limitations of law as a means of justice and decolonization. *Recommended:* 3 ch in Law in Society, Sociology, or Criminology and Criminal Justice.

SOCI4513 Inequality and Social Justice (Cross-Listed: CRIM 4513) 3 ch (W)

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) (EL)

Produce a 40-60 page Honours Thesis that must be approved by the Department of Sociology. This reading and research course is open only to research-based Honours students. 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.

SWE3503 Systems Analysis, Design and Project Management 4 ch (3C 1T) (W)

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.

SWE4040 Software Engineering Design Project 8 ch (2C 4L) (W) (EL)

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 SWE 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 Project Management 4 ch (3C 3L*) (W)

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:* CS 2613 or CS 3503 or SWE 3503, ECE 4403 or CS 2043 or permission from the instructor.

SWE4203 Software Evolution and Maintenance 4 ch (3C 3L*)

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 2L*) (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 creation, 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. Not open to students with any knowledge of Spanish. Credit will not be given for both SPAN 1203 and SPAN 1303. *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 is 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.

Credit will not be given for both SPAN 1204 and SPAN 1304. *Prerequisite:* SPAN 1203.

SPAN1303 Business Spanish I 3 ch (3C) (W)

Gain a practical understanding of the language and context of business Spanish, through a variety of authentic texts and commercial environments. Analyze cultural perspectives of the business world in various Spanish-speaking countries. Not open to students who have taken SPAN 1203, 1204, any upper-level Spanish courses or who have any knowledge of Spanish. Credit will not be given for both SPAN 1203 and 1303.

SPAN1304 Business Spanish II 3 ch (3C)

Intended for students who have successfully completed SPAN 1303. 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. Not open to students who have taken SPAN 1203, 1204, any upper-level Spanish courses or who have any knowledge of Spanish. Credit will not be given for both SPAN 1204 and 1304. *Prerequisite:* SPAN 1203

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: Conversation and Composition 3 ch (3C)

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.

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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, Víctor Erice, Laura Mañá, and Iciar Bollain. 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.

STAT1001 Introduction to Data Sciences with R 3 ch (3C)

Basica data science techniques in R including importing and exporting data, data transformation, visualization, modelling, and utilization of existing libraries. Credit cannot be obtained for both STAT 1001 and CS 2345. *Prerequisite:* MATH 1003.

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

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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; Hypothesis testing methods; Principal component analysis; Variable selection by means of Lasso; graphical models for multivariate categorical data analysis; Bayesian methods and Bayesian inference. *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. Bootstrapping 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 [Section H](#) for abbreviations, course numbers and coding.

TME1001 Introduction to Technology Management and Entrepreneurship 3 ch

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) (EL)

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 is shaped by society and culture, and the relationship. Between innovation and social change.

TME3013 Entrepreneurial Finance 3 ch (EL)

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 Entrepreneurial Environment 3 ch (W) (EL)

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 (EL)

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 (EL)

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 and Entrepreneurship 3 ch (EL)

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 (EL)

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 (EL)

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 (EL)

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.

TME3513 Introduction to Systems- Thinking 3 ch (3C)

Explore the interconnected world of complex systems, focusing on system modeling, critical thinking, research methods, systems diagramming, and the Cynefin framework. Engage in interactive case studies and collaborative exercises to unveil patterns and interdependencies within social, environmental, and technological systems. In teams, select a complex problem, gather data, propose a system model, and present your findings at a semester-end symposium. Cultivate a holistic mindset while learning to apply tools to challenge conventions and drive positive change.

TME3913 Experiential Learning - Technology Management and Entrepreneurship 3 ch (EL)

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) (EL)

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

SECTION H: FREDERICTON COURSES

oriented to their specific faculties. Degree credit for the course is at the discretion of individual faculties.