2016-2017 Undergraduate Calendar

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2016-2017 academic year, including the Summer Semester 2016, the Fall Semester 2016 and the Winter Semester 2017.

For your convenience the Undergraduate Calendar is available in PDF format.

If you wish to link to the Undergraduate Calendar please refer to the Linking Guidelines.

The University is a full member of:

• The Association of Universities and Colleges of Canada

Contact Information:
University of Guelph
Guelph, Ontario, Canada
N1G 2W1
519-824-4120
http://www.uoguelph.ca

Revision Information:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 1, 2016</td>
<td>Initial Publication</td>
</tr>
<tr>
<td>February 3, 2016</td>
<td>Second Publication</td>
</tr>
<tr>
<td>March 4, 2016</td>
<td>Third Publication</td>
</tr>
</tbody>
</table>
Disclaimer

University of Guelph 2016

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2016-2017 academic year, including the Summer Semester 2016, the Fall Semester 2016 and the Winter Semester 2017.

The University reserves the right to change without notice any information contained in this calendar, including fees, any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs. The publication of information in this calendar does not bind the University to the provision of courses, programs, schedules of studies, or facilities as listed herein.

The University will not be liable for any interruption in, or cancellation of, any academic activities as set forth in this calendar and related information where such interruption is caused by fire, strike, lock-out, inability to procure materials or trades, restrictive laws or governmental regulations, actions taken by faculty, staff or students of the University or by others, civil unrest or disobedience, public health emergencies, or any other cause of any kind beyond the reasonable control of the University.

In the event of a discrepancy between a print version (downloaded) and the Web version, the Web version will apply.

Published by: Enrolment Services
Collection, Use and Disclosure of Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) http://www.e-laws.gov.on.ca/index.html. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. Certain personal information is disclosed to external agencies, including the Ontario Universities Application Centre, the Ministry of Training, Colleges, and Universities, and Statistics Canada, for statistical and planning purposes, and is disclosed to other individuals or organizations in accordance with the Office of Registral Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registral Services at the University at (519) 824-4120 or see http://www.uoguelph.ca/registral/registral/index.cfm?index.

Disclosure of Personal Information to the Ontario Ministry of Training, Colleges and Universities

The University of Guelph is required to disclose personal information such as characteristics and educational outcomes to the Minister of Training, Colleges and Universities under s. 15(6) of the Ministry of Training, Colleges and Universities Act, R.S.O. 1990, Chapter M.19, as amended. The Ministry collects this data for purposes including but not limited to planning, allocating and administering public funding to colleges, universities and other post-secondary educational and training institutions.

Amendments made to the MTCU Act, authorizing the collection and use of personal information from colleges and universities by the Minister of Training Colleges and Universities, which were set out in Schedule 5 of the Childcare Modernization Act, 2014, came into force on March 31, 2015.

The amendments strengthen the ability of the Minister to directly or indirectly collect and use personal information about students as required to conduct research and analysis, including longitudinal studies, and statistical activities conducted by or on behalf of the Ministry for purposes that relate to post-secondary education and training, including,

i. understanding the transition of students from secondary school to post-secondary education and training,

ii. understanding student participation and progress, mobility and learning and employment outcomes,

iii. understanding linkages among universities, colleges, secondary schools and other educational and training institutions prescribed by regulation,

iv. understanding trends in post-secondary education or training program choices made by students,

v. understanding sources and patterns of student financial resources, including financial assistance and supports provided by government and post-secondary educational and training institutions,

vi. planning to enhance the affordability and accessibility of post-secondary education and training and the quality and effectiveness of the post-secondary sector,

vii. identifying conditions or barriers that inhibit student participation, progress, completion and transition to employment or future post-secondary educational or training opportunities, and

viii. developing key performance indicators.

Information that the University is required to provide includes but is not limited to: first, middle and last name, Ontario Educational Number, citizenship, date of birth, gender, first three digits of a student’s postal code, mother tongue, degree program and major(s) in which the student is enrolled, year of study and whether the student has transferred from another institution.

Further information on the collection and use of student-level enrolment-related data can be obtained from the Ministry of Training Colleges and Universities website: http://www.tcu.gov.on.ca (English) or http://www.tcu.gov.on.ca/fr/ (French) or by writing to the Director, Postsecondary Finance and Information Management Branch, Postsecondary Education Division, 7th Floor, Mowat Block, 900 Bay Street, Toronto, ON M7A 1L2.


Frequently Asked Questions related to the Ministry’s enrolment and OEN data activities are also posted at: http://www.tcu.gov.on.ca/pepg/publications/FAQs.html

Address for University Communication

Depending on the nature and timing of the communication, the University may use one of these addresses to communicate with students. Students are, therefore, responsible for checking all of the following on a regular basis:

Email Address

The University issued email address is considered an official means of communication with the student and will be used for correspondence from the University. Students are responsible for monitoring their University-issued email account regularly. See Section I--Statement of Students' Academic Responsibilities for more information.

Home Address

Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through Enrolment Services.

Name Changes

The University of Guelph is committed to the integrity of its student records, therefore, each student is required to provide either on application for admission or on personal data forms required for registration, his/her complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation.

Student Confidentiality and Release of Student Information Policy Excerpt

The University undertakes to protect the privacy of each student and the confidentiality of his or her record. To this end the University shall refuse to disclose personal information to any person other than the individual to whom the information relates where disclosure would constitute an unjustified invasion of the personal privacy of that person or of any other individual. All members of the University community must respect the confidential nature of the student information which they acquire in the course of their work.

Learning Outcomes

On December 5, 2012, the University of Guelph Senate approved five University-wide Learning Outcomes as the basis from which to guide the development of undergraduate degree programs, specializations and courses:

1. Critical and Creative Thinking
2. Literacy
3. Global Understanding
4. Communicating
5. Professional and Ethical Behaviour

These learning outcomes are also intended to serve as a framework through which our educational expectations are clear to students and the broader public; and to inform the process of outcomes assessment through the quality assurance process (regular reviews) of programs and departments.

An on-line guide to the learning outcomes, links to the associated skills, and detailed rubrics designed to support the development and assessment of additional program and discipline-specific outcomes, are available for reference on the Learning Outcomes website.

1. Critical and Creative Thinking

Critical and creative thinking is a concept in which one applies logical principles, after much inquiry and analysis, to solve problems in with a high degree of innovation, divergent thinking and risk taking. Those mastering this outcome show evidence of integrating knowledge and applying this knowledge across disciplinary boundaries. Depth and breadth of understanding of disciplines is essential to this outcome.

In addition, Critical and Creative Thinking includes, but is not limited to, the following outcomes: Inquiry and Analysis; Problem Solving; Creativity; and Depth and Breadth of Understanding.

2. Literacy

Literacy is the ability to extract information from a variety of resources, assess the quality and validity of the material, and use it to discover new knowledge. The comfort in using quantitative literacy also exists in this definition, as does using technology effectively and developing visual literacy.

In addition, Literacy includes, but is not limited to, the following outcomes: Information Literacy, Quantitative Literacy, Technological Literacy, and Visual Literacy.

3. Global Understanding:

Global understanding encompasses the knowledge of cultural similarities and differences, the context (historical, geographical, political and environmental) from which these arise, and how they are manifest in modern society. Global understanding is exercised as civic engagement, intercultural competence and the ability to understand an academic discipline outside of the domestic context.

In addition, Global Understanding includes, but is not limited to, the following outcomes: Global Understanding, Sense of Historical Development, Civic Knowledge and Engagement, and Intercultural Competence.

4. Communicating

Communicating is the ability to interact effectively with a variety of individuals and groups, and convey information successfully in a variety of formats including oral and written communication. Communicating also comprises attentiveness and listening, as well as reading comprehension. It includes the ability to communicate and synthesize information, arguments, and analyses accurately and reliably.

In addition, Communicating includes, but is not limited to, the following outcomes: Oral Communication, Written Communication, Reading Comprehension, and Integrative Communication.

5. Professional and Ethical Behaviour

Professional and ethical behaviour requires the ability to accomplish the tasks at hand with proficient skills in teamwork and leadership, while remembering ethical reasoning behind all decisions. The ability for organizational and time management skills is essential in bringing together all aspects of managing self and others. Academic integrity is central to mastery in this outcome.

In addition, Professional and Ethical Behaviour includes, but is not limited to, the following outcomes: Teamwork, Ethical Reasoning, Leadership, and Personal Organization and Time Management.
# Table of Contents

XII. Course Descriptions ........................................... 536
General Information .................................................. 536
Course Labelling and Levels ........................................ 536
Course Information ................................................... 536
Course Prerequisites .................................................. 536
Course Equates and Restrictions .................................... 536
Accounting ................................................................... 537
Agriculture ................................................................... 539
Anatomy ...................................................................... 541
Animal Science ............................................................ 542
Anthropology ............................................................... 544
Art History ................................................................... 546
Arts and Sciences ........................................................ 549
Biochemistry ............................................................... 550
Biology ....................................................................... 551
Biomedical Sciences .................................................... 554
Botany ....................................................................... 556
Business ..................................................................... 557
Chemistry .................................................................... 558
Chinese ...................................................................... 560
Classical Studies .......................................................... 561
Computing and Information Science ............................... 563
Co-operative Education ................................................. 566
Crop Science ................................................................ 567
Economics ................................................................... 568
Environmental Design and Rural Development ............... 572
Engineering .................................................................. 574
English ...................................................................... 582
Environmental Management ......................................... 587
Environmental Sciences ................................................ 588
Equine ....................................................................... 594
European Studies ........................................................ 595
External Courses .......................................................... 596
Family Relations and Human Development .................... 597
Food, Agricultural and Resource Economics .................... 600
Food Science ................................................................ 602
French Studies ............................................................. 605
Geography ................................................................... 608
German Studies ............................................................ 611
Greek ......................................................................... 612
History ....................................................................... 613
Horticultural Science .................................................... 619
Hospitality and Tourism Management ............................. 620
Human Resources and Organizational Behaviour .............. 622
Human Kinetics ............................................................. 624
Humanities .................................................................... 627
Interdisciplinary Physical Science .................................... 628
Interdisciplinary Social Science ....................................... 629
Interdisciplinary University .......................................... 630
Integrative Biology ........................................................ 632
International Development ............................................ 633
Italian Studies ............................................................... 634
Landscape Architecture ................................................ 635
Latin ......................................................................... 637
Linguistics ................................................................... 638
Management ................................................................ 639
Marketing and Consumer Studies .................................... 641
Mathematics ................................................................ 643
Microbiology ................................................................ 645
Molecular and Cellular Biology ...................................... 647
Molecular Biology and Genetics ...................................... 648
Music ........................................................................ 650
Nanoscience ................................................................ 654
Neuroscience ................................................................ 655
Nutrition .................................................................... 656
Organic Agriculture ...................................................... 658
Pathology .................................................................... 659
Pharmacology .............................................................. 660
Philosophy ................................................................... 661
Physics ....................................................................... 665
Physiology ................................................................... 668
Plant Biology ................................................................ 669
Political Science .......................................................... 670
Population Medicine .................................................... 675
Portuguese ................................................................. 676
Psychology .................................................................. 677
Real Estate and Housing ................................................ 681
Sociology .................................................................... 682
Sociology and Anthropology .......................................... 685
Spanish ....................................................................... 687
Statistics ..................................................................... 689
Studio Art .................................................................... 691
Theatre Studies ............................................................ 695
Toxicology ................................................................... 699
Veterinary Medicine ..................................................... 700
Women's Studies .......................................................... 704
Zoology ..................................................................... 705

Last Revision: March 4, 2016  
2016-2017 Undergraduate Calendar
XII. Course Descriptions

General Information

Course Labelling and Levels

Each course is identified by a two-part code. The first part of the code refers to the subject area, the second to the level of the course. Thus, the course PSYC*3570 is a course in the subject area of Psychology (PSYC*XXXX), and is of a level that places it among courses in the 3000 series. The series 1000, 2000, 3000 and 4000 numbers are intended to indicate progressively more demanding content, and correspondingly increasing competence on the part of the students enrolled in the course. Courses in the 1000 series are mainly for first year students, those in the 2000 series are mainly for second year students, and those in the 3000 series are for third year students. Similarly, courses in the 4000 series are mainly intended to be taken by students in the fourth year of honours programs. It is important that students planning their courses have clearly in mind the significance of these numbers so that they may guard against undertaking course work at levels for which they are insufficiently prepared. A two-semester course (e.g. AGR*2351/2) is taken over 2 continuous semesters and counts as 1 course attempt per semester for classification, continuation of study and calculation of fees. Two-semester courses cannot be split.

Course Information

The letters S, F, W indicate the University's intention to offer the course in the Summer (S), Fall (F) or Winter (W) semester during the academic year covered by this Calendar. Although courses normally will be offered in the semester indicated, students preparing their course programs are advised to consult the Undergraduate Course Timetable. The University cannot guarantee that all courses will be offered in the exact semester indicated. The letter U indicates that an intended offering has not been assigned to the course. Students should consult the Undergraduate Course Timetable posted on WebAdvisor or contact the departments offering those courses to determine the semester offerings.

The figures in parentheses ( ) following the semester designation are a general guide to the lecture and laboratory contact hours per week, the first digit being the number of lecture hours and the second, the number of laboratory hours. The credit weight for each course appears in brackets [ ]. A credit weight of [0.50] indicates 10-12 student effort hours, including class time, on academic tasks associated with the course.

Detailed course descriptions are maintained at the office of the department offering the course. Some courses, designated "Experiential Learning" courses in the Calendar description, are deliberately designed to accommodate the need to grant academic credit for experiential learning external to regular courses, in such contexts as co-operative education, field observation/job shadowing, internship/externships, practical, service learning, or work study (and other approved experience). Prior approval for admission to these courses must be obtained from the department and instructor concerned.

Course Prerequisites

In lists of course prerequisites, "or" conditions are spelled out explicitly, but "and" conditions are indicated with a comma ",". For example: "CSTU*2270, FRHD*2010, NUTR*2010" means "CSTU*2270 and FRHD*2010 and NUTR*2010". A number of courses have stated prerequisites which are prior requirements for entry to the course. Students who do not satisfy course prerequisites, or who in the opinion of the instructor do not possess an equivalent background to that of the stated prerequisites, are not eligible to enroll in the course. When some specific background is desirable but not required, the course description will include a statement of recommended background. It is understood that the instructor may accept equivalent courses from other institutions in place of the stated prerequisites. Students who wish to enroll in courses for which they do not have the stated prerequisite(s) must obtain instructor approval as outlined in Section VIII, Undergraduate Degree Regulations and Procedures, in this Calendar.

Course Equates and Restrictions

Equate - Equate indicates a course identical to the one under which it is listed. The course may have been re-numbered or may be cross-listed under two subject areas. Students will not be permitted to register in equated courses.

Restrictions - A restriction is a "rule" that is placed on the computer system (Colleague) at the direction of an academic department so that particular students may not register in particular courses. The course may be restricted because there is sufficient over-lap in content with another course so that it is inappropriate for the student to take a similar course for credit. In a different instance, the course may be restricted by "Instructor Consent" so that the student must discuss the special requirements of the course with the instructor before enrolling. Or, alternatively, the restriction may reflect a "Priority Access" designation for enrolment management purposes. (See Priority Access).
XII. Course Descriptions, Accounting

ACCT*1220 Introductory Financial Accounting F,W (3-0) [0.50]

This introductory course is designed to develop a foundational understanding of current accounting principles and their implication for published financial reports of business enterprises. It builds the base of knowledge and understanding required to succeed in more advanced study of accounting. The course approaches the subject from the point of view of the user of accounting information rather than that of a person who supplies the information.

Offering(s): Also offered through Distance Education format.
Restriction(s): ACCT*2220, This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
Department(s): Department of Management

ACCT*1240 Applied Financial Accounting W (3-0) [0.50]

This course requires students to apply the fundamental principles emanating from accounting’s conceptual framework and undertake the practice of financial accounting. Students will become adept at performing the functions related to each step in the accounting cycle, up to and including the preparation of the financial statements and client reports. Students will also develop the skills necessary for assessing an organization’s system of internal controls and financial conditions.

Prerequisite(s): ACCT*1220 or ACCT*2220
Restriction(s): ACCT*2240, This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
Department(s): Department of Management

ACCT*2230 Management Accounting F,W (3-0) [0.50]

This course emphasizes the use of accounting information to facilitate effective management decisions. Topics include cost determination, cost control and analysis, budgeting, profit-volume analysis and capital investment analysis.

Prerequisite(s): ACCT*1220 or ACCT*2220
Equate(s): AGEC*2230, BUS*2230
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
Department(s): Department of Management

ACCT*2240 Applied Financial Accounting F,W (3-0) [0.50]

This course is designed to develop an understanding of current accounting principles and their implication for published financial reports of business enterprises. The course approaches the subject from the view of the user of accounting information rather than that of a person who supplies the information.

Offering(s): Also offered through Distance Education format. Last offering - Summer 2016
Prerequisite(s): 2.00 credits
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
Department(s): Department of Management

ACCT*2270 Auditing I S,F (3-0) [0.50]

Auditing I is an examination of the principles and theory underlying the practice of auditing. Concepts of materiality and audit risk are examined and discussed. Sources and techniques for gathering auditing evidence will also be examined. Modern organizations rely on information systems, technology and internal controls to manage and monitor their operations and the impact of these systems on the quality of information produced and on the scope of audits are important elements of this course.

Prerequisite(s): ACCT*3330
Department(s): Department of Management

ACCT*3330 Intermediate Financial Accounting I F,W (3-0) [0.50]

This course presents a critical evaluation of accounting concepts, principles and practices in relation to both the traditional and current value accounting measurement models. Emphasis will be on the effect of alternative accounting practices and measurement models on income determination and asset valuation.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): ACCT*1220 or ACCT*2220
Equate(s): BUS*3330
Department(s): Department of Management

ACCT*3340 Intermediate Financial Accounting II S,F (3-0) [0.50]

This course focuses on how entities account for current and non-current liabilities and equity accounts, including, income taxes, leases, pensions and other post retirement benefits, share equity and retained earnings, stock options. Additional topics may include earnings per share, restatements and statement analysis.

Prerequisite(s): ACCT*3330
Department(s): Department of Management

ACCT*3350 Taxation S,F (3-0) [0.50]

The fundamentals of the tax system as it applies to all taxpayers will be the focus of the first half of the course. The second half will develop forms of business organizations from a tax perspective. Basic tax planning techniques which attempt to maximize the cash flows and returns on investments will then be studied. The emphasis in the course is on business decision making. A review of personal financial planning and investment decisions will also be included.

Prerequisite(s): ACCT*3330
Restriction(s): Enrolment may be restricted to particular degrees or programs. See the department for more information.
Department(s): Department of Management

ACCT*4220 Advanced Financial Accounting F (3-0) [0.50]

This course is a critical evaluation of issues and problems associated with business combinations, long-term intercorporate investments, foreign operations and accounting for not-for-profit organizations. There is a strong emphasis on applying this body of knowledge through practical problems.

Prerequisite(s): (ACCT*3330 or BUS*3330), (ACCT*3340 or BUS*3340)
Equate(s): BUS*4220
Restriction(s): Enrolment may be restricted to particular degrees or programs. See the department for more information.
Department(s): Department of Management

ACCT*4230 Advanced Management Accounting W (3-0) [0.50]

This course provides advanced coverage of management accounting concepts and the application of management accounting information for managerial decision-making. This course extends the concepts covered in intermediate management accounting and also integrates pertinent situational problems from other functional areas of enterprises such as global trade and process controls.

Prerequisite(s): ACCT*3230 or BUS*3230
Equate(s): BUS*4230
Restriction(s): Enrolment may be restricted to particular degrees or programs. See the department for more information.
Department(s): Department of Management

ACCT*4270 Auditing II F (3-0) [0.50]

This course considers a number of advanced topics concerning both the auditor and audit techniques within the context of public accounting. It builds on the knowledge of the audit task derived in Auditing I - ACCT*3280 as well as the depth and breadth of knowledge gained in ACCT*3330 and ACCT*3340.

Prerequisite(s): ACCT*3280 or BUS*3280
Equate(s): BUS*4270
Department(s): Department of Management
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT*4290</td>
<td>Auditing III W (3-0)</td>
<td>0.50</td>
<td>This course introduces the student to the field of auditing within the field of Electronic Data Processing (EDP). Prerequisite(s): ACCT<em>3280 or BUS</em>4280. Equate(s): BUS*4290. Department(s): Department of Management.</td>
</tr>
<tr>
<td>ACCT*4340</td>
<td>Accounting Theory W (3-0)</td>
<td>0.50</td>
<td>This course will draw on accounting research, primarily empirical research. Rather than covering specific GAAP rules, the course will focus on how investors react to GAAP rules, why financial information is important, and how its use/misuse affects investor decision making and management behaviour. The course is thus about accounting, instead of about how to apply accounting standards. Prerequisite(s): ACCT<em>4220. Restriction(s): ACCT</em>4240. Department(s): Department of Management.</td>
</tr>
<tr>
<td>ACCT*4350</td>
<td>Income Taxation II F (3-0)</td>
<td>0.50</td>
<td>An intensive study of the Canadian Income Tax Act and related statutes, this course will focus on the application to the taxation of individuals, partnerships and corporations. A strong emphasis will be placed on compliance and tax planning. Prerequisite(s): ACCT<em>3350 or BUS</em>3350. Equate(s): BUS*4350. Department(s): Department of Management.</td>
</tr>
<tr>
<td>ACCT*4440</td>
<td>Integrated Cases in Accounting W (3-0)</td>
<td>0.50</td>
<td>This course will help students develop an analytical approach to analyzing accounting problems and improve professional judgement. Students will apply previously-gained technical knowledge of accounting, tax, assurance, finance, and corporate governance to various financial reporting and advisory problems and scenarios. They will develop an enhanced understanding of the impact of user and preparer objectives on the selection of accounting policies, and accounting estimates in an environment of some uncertainty. Prerequisite(s): ACCT<em>4220. Restriction(s): ACCT</em>4240. Department(s): Department of Management.</td>
</tr>
</tbody>
</table>
Agriculture

Ontario Agricultural College, Dean's Office

AGR*1110 Introduction to the Agri-Food Systems F (6-0) [1.00]

This introductory course provides an overview of Canadian and global agri-food systems. Students will be introduced to many different facets of agriculture, including primary production (conventional and organic) of commodity, mid-value and high-value crops, and livestock. Students will explore the agri-food system by tracing consumer end-products back to primary production. Modern, industrial agri-food systems as well as subsistence farming will be discussed. The course incorporates an experiential learning component in which students will explore a new agri-food opportunity for Ontario by designing and assessing the value chain.

Restriction(s): AGR*1100 . AGR*1250 . Restricted to students in BAH.FARE, BSC(AGR), Minor in Agriculture

Department(s): Department of Plant Agriculture, Department of Animal Biosciences

Location(s): Guelph

AGR*2030 Pasture Management F (3-2) [0.50]

This course focuses on forage and weed identification, establishing, maintaining and improving pasture for grazing or cropping, and environmental and conservation stewardship approaches to pasturelands.

Prerequisite(s): (ENVS*2060 or SOIL*2010 )

Restriction(s): Registered in BBRM.EQM

Department(s): Dean's Office, Ontario Agricultural College

AGR*2050 Agroecology W (3-0) [0.50]

This course considers the interactions of all important biophysical, technical and socioeconomic components of farming systems and examines these systems as the fundamental units of study. Mineral cycles, energy transformations, biological processes and socioeconomic relationships are analyzed as a whole in an interdisciplinary fashion.

Prerequisite(s): (AGR*1110 or AGR*2150), (BIOL*1050 or BIOL*1070)

Restriction(s): CROP*2110

Department(s): Department of Plant Agriculture, Department of Animal Biosciences

AGR*2150 Plant Agriculture for International Development F (3-0) [0.50]

This course will provide students interested in international development with an introductory mechanistic understanding of the biology underlying crop production in developing nations. Emphasis will be placed on simple, low-cost solutions from biology that have the potential to aid efforts in international development. This course is accessible to science and non-science students.

Prerequisite(s): 4.00 credits

Restriction(s): AGR*2470

Department(s): Department of Plant Agriculture

AGR*2320 Soils in Agroecosystems F (3-2) [0.50]

This course is an introduction to soil resources with emphasis on management practices that will sustain the productivity of these resources and enhance the quality of the ecosystems of which they are a part. Students will develop a management plan for a farm that will take into account the roles of geological, geomorphological, biological, climatic and temporal factors on the formation, properties and uses of soils. The management plans will be placed in the broader context of provincial policies related to soil, air and water resources and local zoning regulations.

Prerequisite(s): 2.50 credits

Restriction(s): ENVS*2060 or SOIL*2010

Department(s): School of Environmental Sciences

AGR*2350 Animal Production Systems, Health and Industry F (3-3) [0.50]

This course is designed to introduce the student to the Agri-food system in Ontario, nationally and internationally. All major animal industries will be covered starting from the forage and feed management to human nutrition. Companion and exotic animals will also be covered. Topics include feed, health and wellness (domestic animals and human), nutrition, housing, genetics, reproduction, husbandry practices and processing.

The course includes laboratories and animal production unit tours.

Prerequisite(s): BIOL*1030 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)

Department(s): Department of Animal Biosciences

AGR*2470 Introduction to Plant Agriculture F (3-3) [0.50]

The basic principles of plant morphology, nutrition, growth and development will be related to where and how agriculturally significant plants are grown. Agroecosystems and farming systems will be considered as frameworks for crop production analyses. The course uses examples from temperate, sub-tropical and tropical crops and cropping systems. Labs include problem-solving exercises in the context of plant production.

Prerequisite(s): BIOL*1050 or BIOL*1070

Restriction(s): AGR*2150

Department(s): Department of Plant Agriculture

AGR*2500 Field Course in International Agriculture W (3-0) [0.50]

This course introduces students to a wide range of tropical and sub-tropical agricultural production systems and issues. The course is comprised of a weekly 3 hour evening lecture and a two week field trip to Costa Rica where students will visit corporate and individual farms, university and government research stations. The field trip occurs during Reading Week in February. This course must be recorded as part of your Winter course selection. The cost of the course is approximately $2500.00 per student, in addition to tuition and compulsory fees. Students must identify their interest in taking this course by contacting the OAC Dean's Office before the October course selection period of the previous year. In order to confirm reservations for travel arrangements a deposit of $300 in the form of a cheque, made payable to the University of Guelph, must be submitted to the OAC Dean's Office by November. Some financial support for travel may be available.

Prerequisite(s): (AGR*1110 or AGR*1250 ) or registration in International Development

Restriction(s): Registration in BSC(AGR) or BA.ID or Minor in Agriculture Instructor consent required.

Department(s): Dean's Office, Ontario Agricultural College

AGR*3010 Special Studies in Agricultural Science I S,F,W (3-0) [0.50]

A special study option that enables undergraduate students in semesters 5 through 8 to undertake specific projects in agricultural sciences. The topic of the special study will be determined in consultation with an faculty member and the individual student. Students are responsible for making appropriate arrangements with faculty at the departmental and/or college level prior to registration for the course.

Prerequisite(s): 10.00 credits

Restriction(s): Instructor consent required.

Department(s): Department of Plant Agriculture

AGR*3450 Research Methods in Agricultural Science F (3-2) [0.50]

This course provides students with an opportunity to enhance their understanding of the principles and processes of agricultural research. The course will provide students with a foundation in critical thinking, experimental design and data analysis that will be applicable to independent research projects and graduate studies. Students will also explore the practical requirements and limitations of scientific research. Laboratory and field safety, animal care, intellectual property and research ethics will be reviewed. Students will be required to practice both oral presentation and writing skills as core components of their evaluation.

Prerequisite(s): Completion of 7.50 credits including (1 of GEOG*2460, STAT*2040 STAT*2060, STAT*2080)

Restriction(s): Enrollment in the BSC(AGR), BBRM, BSC.ABIO or Minor in Agriculture.

Department(s): Department of Plant Agriculture, Department of Animal Biosciences

AGR*3500 Experiential Education I F (3-0) [0.50]

Student initiated experiential learning opportunities can be developed as a credit course in consultation with a supervising faculty member. Details of the activities included in the program will be outlined in a learning contract initiated by the student and agreed by the faculty supervisor in the April prior to the commencement of the work experience. The employer will also provide a description of the project and/or the work experience. The course is designed to meet the needs of BSC(Agr.), BBRM and Agricultural Business students.

Prerequisite(s): 5.00 credits

Restriction(s): Instructor consent required.

Department(s): Department of Plant Agriculture

AGR*3510 Experiential Education II F (3-0) [0.50]

The purpose of this course is to enable students to gain generic career skills by actively reflecting on their own skills in the context of their own summer employment. Students conduct a self-assessment, and work to improve skills they themselves select as goals. They also undertake a major project that is probably, but not necessarily, related to their summer employment. This project is done with the assistance of a faculty advisor.

Prerequisite(s): AGR*3500

Restriction(s): Instructor consent required.

Department(s): Department of Animal Biosciences

AGR*4010 Special Studies in Agricultural Science II S,F,W (3-0) [0.50]

This special study option enables undergraduate students in semesters 5 through 8 to undertake specific projects in agricultural science. The topic of the special study will be determined in consultation with a faculty member and the individual student. Students are responsible for making appropriate arrangements with faculty member prior to registration for the course.

Prerequisite(s): 15.00 credits

Restriction(s): Instructor consent required.

Department(s): Department of Animal Biosciences
**AGR*4450 Research Project I**

This course provides for the independent study of a current topic in agricultural or environmental science designed to encourage senior undergraduates to conduct research. The course includes participation in meetings organized by the coordinator, work with a faculty advisor to develop a research project, formulate hypotheses, design and carry out preliminary experiments to test the hypotheses. Students will carry out independent library research, begin experimental work, prepare a written report and make a presentation to other students in the course of the research plan and preliminary results. Students must make arrangements with both the faculty supervisor and the course coordinator at least one semester before starting the course. This course will normally be followed by AGR*4460 to provide 2 semesters to complete the research project.

**Prerequisite(s):** 10.00 credits

**Restriction(s):** Permission of the course coordinator (contingent on the availability and agreement of a faculty advisor). BSC(Agr) or BSC or BBRM, 70% cumulative average.

**Department(s):** Dean's Office, Ontario Agricultural College

---

**AGR*4460 Research Project II**

Independent study of a current topic in agricultural or environmental science designed to encourage senior undergraduates to conduct research. The focus of this course will be the completion of the research plan developed in AGR*4450 by the student in consultation with a faculty advisor. The course includes participation in meetings organized by the coordinator and meetings with a faculty advisor to review research progress. Students will carry out independent research, prepare a written report of the research findings in a scholarly style and make a presentation to other students in the course of the research results. Open to students in semesters 6, 7 and 8 of the B.SC. Agr. or B.Sc. degree program.

**Prerequisite(s):** AGR*4450

**Restriction(s):** Permission of the course coordinator and faculty advisor.

**Department(s):** Dean's Office, Ontario Agricultural College

---

**AGR*4600 Agriculture and Food Issues Problem Solving**

The issues facing the agriculture and food sector are many and varied and relate to the economy, the environment and society. Within these issues there are problems which require thoughtful solutions. Working in teams, with guidance from faculty advisors, students will have an opportunity to develop solutions to real-world problems facing the agriculture and food sector. In the process students will have an opportunity to develop their research, communication, presentation, writing and group work skills.

**Prerequisite(s):** 12.50 credits

**Restriction(s):** Registration in BSC(AGR), BCOMM.FAB, B.COMM.FAB:C or BA.FARE program.

**Department(s):** Department of Plant Agriculture
Anatomy

Department of Biomedical Sciences

For course listings and descriptions see Biomedical Sciences.

Additional course listings may be found in the course descriptions for Human Kinetics, Veterinary Medicine and Zoology.
Animal Science

Department of Animal Biosciences

ANS*C*1210 Principles of Animal Care and Welfare W (4.5-0) [1.00]
Students will be introduced to the major ethical theories that deal with humanity’s duties to animals. The relationship of ethics to science will be discussed. Factors that contribute to the quality of life of animals will be considered and methods of assessing animal welfare will be described. Common causes of reduced animal welfare will be covered. The course will also deal with how different cultures approach animal welfare and attempts to regulate it.
Prerequisite(s): BIOL*1050
Restriction(s): ANSC*3210
Department(s): Department of Animal Biosciences

ANS*C*2330 Horse Management Science F (3-0) [0.50]
An introduction to horse management designed to give those with an interest in the various segments of the horse industry a strong scientific basis for production and management decisions. The course includes study of the evolution of our current industry, the biology of growth, performance and management of the equine athlete. The evaluation of conformation as it relates to performance as well as aspects of behaviour, nutrition, reproduction and genetics consistent with the level of the course are included.
Prerequisite(s): [ BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)]
Restriction(s): Not available to students registered in BBRM.EQM program.
Department(s): Department of Animal Biosciences

ANS*C*2340 Structure of Farm Animals W (3-1) [0.50]
This course is an introduction to the carcass structure of cattle, pigs, sheep and poultry. Animal growth and development are considered in relation to meat production. The course is for students intending to major in Animal Science and Animal Biology.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)
Department(s): Department of Animal Biosciences

ANS*C*3040 Animal Reproduction W (3-3) [0.50]
This course takes a multi-species approach to understanding the basic principles of animal reproduction. Both the anatomy and the physiology of reproductive systems are explored in agricultural, companion and wildlife species with an emphasis on animals under human management. In addition, the development and application of assisted reproductive technologies (ART) for animal management are introduced.
Prerequisite(s): ANSC*3080
Department(s): Department of Animal Biosciences

ANS*C*3050 Aquaculture: Advanced Issues F (3-0) [0.50]
This course examines the fundamental principles and advanced interdisciplinary issues involved in the farming of aquatic organisms. The course will concentrate primarily on fish species due to their worldwide commercial importance. Lectures will cover fish physiology, behaviour, nutrition, genetics, water quality, health and disease, reproductive techniques, economic, political and legal issues and various culture technologies. Students will analyze contemporary challenges facing the aquaculture industry through exercises requiring interdisciplinary knowledge, lateral thinking, creative problem solving and bridging science and technology to issues management.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): A minimum of 8.00 credits in biology, including AGR*2350 or ZOO*2900
Department(s): Department of Animal Biosciences

ANS*C*3080 Agricultural Animal Physiology F (3-1.5) [0.50]
This course is an introduction to the physiology of domesticated farm animals. The course will emphasize homeostatic control of the major body systems. The lectures cover the nervous, cardiovascular, respiratory, urinary, immune, endocrine and reproductive systems. The lectures and laboratories are closely integrated.
Prerequisite(s): BIOC*2580 or EQN*2040
Restriction(s): Registration in BSC(Agr), BSC.ABIO or BBRM.EQM, Minor in Agriculture.
Department(s): Department of Animal Biosciences

ANS*C*3120 Introduction to Animal Nutrition F (3-2) [0.50]
This course applies the principles of nutrition to the development of diets and feeding programs for the various species of animals of agricultural importance.
Co-requisite(s): NUTR*3210
Restriction(s): Registration in BSC(Agr) or BSC.ABIO
Department(s): Department of Animal Biosciences

ANS*C*3170 Nutrition of Fish and Crustacea W (3-0) [0.50]
The nutrition of fish and crustaceans with emphasis on those species used in aquaculture. Nutritional biochemistry, nutritional pathology and comparative nutrition of cold blooded, amnonotonic animals mainly carnivorous, contrasted with warm blooded ureotolic omnivores.
Offering(s): Offered in even-numbered years.
Prerequisite(s): NUTR*3210
Department(s): Department of Animal Biosciences

ANS*C*3180 Wildlife Nutrition W (3-0) [0.50]
A study of the nutrition of avian and mammalian wildlife with emphasis on North American species. The role of nutrition in survival and population growth of wildlife in their natural habitat. Formulation of diets for wild species in captivity.
Prerequisite(s): NUTR*3210
Department(s): Department of Animal Biosciences

ANS*C*3270 Animal Disorders W (3-0) [0.50]
This course will highlight common causes of infectious, metabolic and reproductive disorders of domestic and companion animals and their potential impact on animal welfare and production, as well as producers and consumers. Disorders will be addressed in the context of pathophysiology, transmission and prevention strategies involving biosecurity, vaccination, nutrition, genetic selection and environmental enrichment.
Prerequisite(s): ANSC*2340
Restriction(s): POPM*4230
Department(s): Department of Animal Biosciences

ANS*C*4050 Biotechnology in Animal Science F (3-2) [0.50]
Starting from the principles of recombinant DNA, DNA marker identification, stem cell and generation of transgenic animals, the course provides an overview on how biotechnology has impacted biomedical science and animal production. The current challenges and potential opportunities in this field are discussed.
Prerequisite(s): MBG*2040 or MBG*2400
Department(s): Department of Animal Biosciences

ANS*C*4090 Applied Animal Behaviour F (3-0) [0.50]
This course deals with why domesticated animals behave as they do with reference to causation, function, ontogeny and phylogeny. Basic principles are illustrated by examples taken from all the common domesticated and captive species. Emphasis is placed on the application of behavioural knowledge to improve captive environments and animal production systems. Designing housing, facilities and management procedures to suit the behaviour of the animals in question is also covered.
Prerequisite(s): ANSC*3080
Department(s): Department of Animal Biosciences

ANS*C*4100 Applied Environmental Physiology and Animal Housing W (3-0) [0.50]
Basic concepts of environmental physiology and their application to animal housing and management will be introduced. The course will review the physics of heat flow, light and air quality as they relate to animal biology and health. Other aspects, such as the physical environment, that impact on animal health and well-being will be discussed.
Prerequisite(s): ANSC*3080
Department(s): Department of Animal Biosciences

ANS*C*4230 Challenges and Opportunities in Animal Production F (0-6) [0.50]
This course will provide senior level students with experience in working as a team to propose solutions to animal industry problems. Teams of students will critically assess animal-related businesses at the farm or industry level under the supervision of a faculty member. Students and faculty will meet in the preceding Winter semester to identify common interests and develop a preliminary strategy.
Prerequisite(s): ANSC*3080, NUTR*3210, MBG*3090
Restriction(s): Instructor consent required.
Department(s): Department of Animal Biosciences

ANS*C*4260 Beef Cattle Nutrition W (3-0) [0.50]
This course is designed for students to evaluate problems in feeding beef cattle. Relevant aspects of digestion and metabolism of nutrients as well as current issues of feeding beef cattle and diagnosing nutritional deficiencies will be included.
Prerequisite(s): ANSC*3120
Department(s): Department of Animal Biosciences

ANS*C*4270 Dairy Cattle Nutrition F (3-0) [0.50]
This course is designed to apply principles of dairy cattle nutrition to solving on-farm nutritionally based problems. A case study approach will be used in conjunction with computer modeling and computer ration formulation programs.
Prerequisite(s): ANSC*3120
Department(s): Department of Animal Biosciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Co-requisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC*4280</td>
<td>Poultry Nutrition F (3-0) [0.50]</td>
<td>This course is designed to evaluate nutrient requirements of poultry. Students will learn how to apply feeding programs for meat, laying birds and breeders and how feeding affects poultry meat and egg composition.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4290</td>
<td>Swine Nutrition F (3-0) [0.50]</td>
<td>This course is designed to explore details of evaluating feed ingredients and formulating diets for swine. Students will use models to evaluate various aspects of nutrient partitioning for growth and reproduction in pigs.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4350</td>
<td>Experiments in Animal Biology W (0-6) [0.50]</td>
<td>This course provides an opportunity for directed hands-on projects involving live animals and laboratory techniques. A set of selected projects will be provided by APS faculty within their broad fields of study, for example animal behaviour and welfare, environmental physiology, endocrinology, and reproduction.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4470</td>
<td>Animal Metabolism W (3-0) [0.50]</td>
<td>Current concepts in whole animal metabolism and the quantitative techniques used to measure whole body metabolic kinetics will be presented. Tissue and organ specific biochemical processes will be integrated with whole body control mechanisms.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4490</td>
<td>Applied Endocrinology W (3-0) [0.50]</td>
<td>This course examines the endocrine systems of farm animals and their applications to livestock production. Considerable emphasis will be placed upon understanding how knowledge of endocrine regulation can be applied within animal production systems.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4560</td>
<td>Pet Nutrition F (3-0) [0.50]</td>
<td>This course covers nutrient requirements, feed formulation and nutritional idiosyncrasies for dogs, cats, and exotic pets.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4610</td>
<td>Critical Analysis in Animal Science W (3-0) [0.50]</td>
<td>Each student will select and critically review a topic of emerging importance in animal science. The topic will be presented to the group as a written paper in journal format, as a poster, and as a formal seminar. This course is designed for students in their final year of the Animal Biology Major.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4650</td>
<td>Comparative Immunology W (3-0) [0.50]</td>
<td>Livestock and fish have developed common and unique defense strategies for resisting microbial and viral infections. The focus of this course is to review and compare these defense mechanisms in different tissues, and describe the significance of neuroendocrine signalling, genetic polymorphisms, nutrition and food-borne toxins, and host-microbial interaction in regulating innate and acquired immune responses and disease resistance.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4700</td>
<td>Research in Animal Biology I S,F,W (0-6) [0.50]</td>
<td>This course is a continuation of ANSC<em>4700, Research in Animal Biology I. It allows more sophisticated projects to be undertaken or to provide an opportunity to build upon the work of ANSC</em>4700. Evaluation of the course requires a greater emphasis on data analysis or experimental design than for ANSC*4700. Selection of a faculty advisor and approval of course coordinator must be obtained before course selection.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
<tr>
<td>ANSC*4710</td>
<td>Research in Animal Biology II S,F,W (0-6) [0.50]</td>
<td>This course is a continuation of ANSC<em>4700, Research in Animal Biology I. It allows more sophisticated projects to be undertaken or to provide an opportunity to build upon the work of ANSC</em>4700. Evaluation of the course requires a greater emphasis on data analysis or experimental design than for ANSC*4700. Selection of a faculty advisor and approval of course coordinator must be obtained before course selection.</td>
<td></td>
<td></td>
<td>Department of Animal Biosciences</td>
</tr>
</tbody>
</table>
Anthropology

Department of Sociology and Anthropology

The Department of Sociology and Anthropology offers three types of courses: sociology courses with the prefix SOC*; anthropology courses with the prefix ANTH*; and departmental courses with the prefix SOAN*.

Courses will normally be offered in the semesters designated. For information on other semesters these courses will be offered and the semesters those courses without designations will be offered, please check with the department. In addition to regularly scheduled courses, students may elect to do independent study. A student who wishes to do a reading course should first consult the professor with whom he/she wishes to work. Please note: a student is allowed a total of 1.00 credits only for reading courses.

Please note: The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.

ANTH*1120 Biological Anthropology F (3-0) [0.50]
In this course students will be introduced to the central concepts of biological anthropology. Potential topics to be explored include human evolution, contemporary human diversity, nutrition and diet, and an introduction of forensic anthropology and paleopathology.
Department(s): Department of Sociology and Anthropology

ANTH*1150 Introduction to Anthropology F,W (3-0) [0.50]
This course deals with humankind from a broad historical and cross-cultural perspective. Theoretical models, case studies and specific methods will be presented. Course topics may include the origin and transformations of human society, the relationship between biological and cultural traits, human language, variation in family structure and religion, the economic and political aspects of human society.
Offering(s): Also offered through Distance Education format.
Department(s): Department of Sociology and Anthropology

ANTH*2160 Social Anthropology W (3-0) [0.50]
Using case studies and ethnographies, this course explores the application of anthropological theory and practice to diverse cross-cultural public issues. Topics of discussion will include some of the following: indigenous rights, international development, social marginalization, health and wellbeing, and gender relations.
Prerequisite(s): ANTH*1150
Department(s): Department of Sociology and Anthropology

ANTH*2230 Regional Ethnography F (3-0) [0.50]
This course offers a survey of ethnographic studies on selected cultural/geographical area(s) of the world. Topics covered may include social, economic and political systems, the colonial encounter, and the theoretical, methodological and political contexts of ethnographic representation.
Prerequisite(s): ANTH*1150
Department(s): Department of Sociology and Anthropology

ANTH*2660 Contemporary Native Peoples of Canada W (3-0) [0.50]
An analysis of the impact of Euro-Canadian society on native culture. Particular emphasis will be given to contemporary issues relating to Canadian native peoples (Indians, Inuit and Metis) such as education, treaties and reserves, land claims, government administration and economic development.
Prerequisite(s): ANTH*1150 or SOC*1100
Department(s): Department of Sociology and Anthropology

ANTH*3400 The Anthropology of Gender W (3-0) [0.50]
This course will address theoretical innovation in the discipline of socio-cultural anthropology in the study of gender and feminist issues on the basis of cross-cultural ethnographic case studies. Theoretical problems such as gender inequality, complementarity, the domestic/public divide, ritual and symbolic valuations and the division of labour will be considered in the context of cultural relativity.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 10.00 credits including (ANTH*2160 or SOAN*2400), (SOAN*2120 or WMST*3000).
Department(s): Department of Sociology and Anthropology

ANTH*3650 Prehistory of Canadian Native Peoples F (3-0) [0.50]
This is a course in Aboriginal studies which uses archaeological, ethno-historical and contemporary research to examine the culture and social organization of First Nations peoples in Canada from their early beginnings to European contact.
Prerequisite(s): ANTH*2160, (ANTH*2230 or ANTH*2660)
Restriction(s): ANTH*2650
Department(s): Department of Sociology and Anthropology

ANTH*3670 Indigenous Peoples: Global Context W (3-0) [0.50]
This course will focus on aboriginality as a political and cultural identity. Historical, political, and cultural similarities between indigenous peoples the world over will be traced and key issues such as assimilation, cultural survival, protection of the commons, and the environment and cultural identity within the nation state will be examined. International organizations of indigenous peoples will be considered as well as other forms of transnational assertions of common identity and resistance.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (1 of ANTH*2160, ANTH*2230, ANTH*2660, SOC*2660, IDEV*2010, IDEV*2500), SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*3690 Engaging Anthropological Theory F (3-0) [0.50]
This course offers an analysis of the main trends in anthropological theory and practice. Areas of discussion will include the crisis of representation, interpretive anthropology, feminist anthropology, and agency and structure debates.
Prerequisite(s): ANTH*2160, ANTH*2230, SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*3770 Kinship, Family, and Power W (3-0) [0.50]
This course explores the changing nature of what it means to be a family from anthropological and cross-cultural perspectives. Topics of discussion include kinship, descent, marriage, our relationships to ancestors, gender and power relations, and the politics of kinship ties. In addition, the course considers the relevance of kinship to contemporary issues such as gay, lesbian, bisexual and transgendered families, the use of reproductive technologies, and international adoptions.
Prerequisite(s): ANTH*2160, ANTH*2230, SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*3840 Seminar in Anthropology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.
Prerequisite(s): 10.00 credits including ANTH*2160, SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*3850 Seminar in Anthropology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.
Prerequisite(s): 10.00 credits including ANTH*2160, SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*3950 Special Projects in Anthropology S,F,W (3-0) [0.50]
This special study option/reading course is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the study is required.
Prerequisite(s): 10.00 credits
Restriction(s): Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.
Department(s): Department of Sociology and Anthropology

ANTH*4300 Anthropological Issues F (3-0) [0.50]
This course offers an analysis of the main trends in anthropological theory and practice. Areas of discussion will include the crisis of representation, interpretive anthropology, feminist anthropology, and agency and structure debates.
Prerequisite(s): ANTH*2160, ANTH*2230, SOAN*2120
Department(s): Department of Sociology and Anthropology

ANTH*4360 Anthropological Issues F (3-0) [0.50]
This special study option/reading course is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the study is required.
Prerequisite(s): 10.00 credits
Restriction(s): Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.
Department(s): Department of Sociology and Anthropology

ANTH*4390 Special Projects in Anthropology S,F,W (3-0) [0.50]
This special study option/reading course is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the study is required.
Prerequisite(s): 10.00 credits
Restriction(s): Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.
Department(s): Department of Sociology and Anthropology

ANTH*4440 Culture, Rights and Development W (3-0) [0.50]
This course examines the theoretical and practical problems associated with respecting local cultures while also respecting human dignity universally. Various definitions of 'development' will be explored in terms of how they reflect cultural values and global inequalities.
Prerequisite(s): 12.50 credits including ANTH*3690, SOAN*3070
Department(s): Department of Sociology and Anthropology
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH*4540</td>
<td>Seminar in Anthropology</td>
<td>(3-0) [0.50]</td>
<td>This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available. Prerequisite(s): 12.50 credits including ANTH<em>3690 or SOC</em>3310, SOAN*3070 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>ANTH*4550</td>
<td>Topics in the Anthropology of Health</td>
<td>F (3-0) [0.50]</td>
<td>This seminar focuses on the anthropological analyses of medical and health issues among current and past populations. The course is based on case studies. It will provide students with a grounding in the theoretical approaches appropriate to anthropological considerations of issues relating to health. Prerequisite(s): 12.50 credits including ANTH<em>3690, SOAN</em>3070</td>
</tr>
<tr>
<td>ANTH*4640</td>
<td>Seminar in Anthropology</td>
<td>F,W (3-0) [0.50]</td>
<td>This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available. Prerequisite(s): 12.50 credits including ANTH<em>3690, SOAN</em>3070 or SOAN*3120</td>
</tr>
<tr>
<td>ANTH*4700</td>
<td>Issues in Contemporary Anthropological Theory</td>
<td>W (3-0) [0.50]</td>
<td>This course critically examines current anthropological theories, which may include post-structuralism, post-modernism, neo-Marxism and processual approaches. Attention may also be given to the theoretical and political implications of constructionism and calls for ethnographic reflexivity. Prerequisite(s): 12.50 credits including ANTH<em>3690, SOAN</em>3070</td>
</tr>
<tr>
<td>ANTH*4740</td>
<td>Seminar in Anthropology</td>
<td>F,W (3-0) [0.50]</td>
<td>This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available. Prerequisite(s): 12.50 credits including ANTH<em>3690 or SOC</em>3310, SOAN*3070</td>
</tr>
<tr>
<td>ANTH*4840</td>
<td>Seminar in Anthropology</td>
<td>F,W (3-0) [0.50]</td>
<td>This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available. Prerequisite(s): 12.50 credits including ANTH<em>3690 or SOC</em>3310, SOAN*3070</td>
</tr>
<tr>
<td>ANTH*4850</td>
<td>Special Projects in Anthropology</td>
<td>S,F,W (3-0) [0.50]</td>
<td>This special study/reading course option is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the project is required. Prerequisite(s): 12.50 credits</td>
</tr>
<tr>
<td>ANTH*4890</td>
<td>Special Projects in Anthropology</td>
<td>S,F,W (3-0) [0.50]</td>
<td>This special study/reading course option is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the project is required. Prerequisite(s): 12.50 credits</td>
</tr>
</tbody>
</table>

ANTH*4910 Honours Anthropology Thesis II S,F,W (3-0) [0.50]
Completion and presentation of honours thesis.
Prerequisite(s): ANTH*4900
Restriction(s): Instructor consent required.
Department(s): Department of Sociology and Anthropology
### XII. Course Descriptions, Art History

**ARTH*1510 Art Historical Studies I F (3-0) [0.50]**

This course considers the visual arts in the Western tradition from prehistory through the Middle Ages. Emphasis will be placed on historical and critical analysis of key monuments and on the prerequisite technologies, as well as on various ways of looking at the visual past and present.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*1520 Art Historical Studies II W (3-0) [0.50]**

A consideration of the visual arts in the Western tradition. Emphasis will be placed on historical and critical analysis of key monuments and on the prerequisite technologies, as well as on various ways of looking at the visual past and present. Focus will be on the visual arts from the Renaissance to today.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2050 Modern Latin American Art F (3-0) [0.50]**

This course is an introduction to the study of visual culture and theory from South and Central America, Mexico and the Caribbean featuring art from the 20th century to the present.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2060 Aboriginal Arts in the Americas F (3-0) [0.50]**

This course offers an introduction to the aboriginal cultures of North, South, and Central America with special emphasis on the pre-contact period. The interdisciplinary approach will take into account recent debates about methodology, ethnocentricity, and aboriginal viewpoints.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2070 Art of the USA W (3-0) [0.50]**

In art, the 20th century has been referred to as "The American Century." Artists in the USA have a tradition of creating new visual languages, of using new ideas and technologies, and of representing the vanguard. Where did these ideas originate, and how has the USA determined our notions of what art is? This survey course focuses on modern American artists, on the evolution and growth of modern visual culture, and on how technologies and societies impact on artistic taste.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2120 Introduction to Museology W (3-0) [0.50]**

The course will examine the history of collections, traditions of cultural representation and display, constructions of authenticity, trade and exchange.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2150 Art and Archaeology of Greece F (3-0) [0.50]**

This course is a survey of Ancient Greek Art and Archaeology, with stress on form and function plus stylistic trends and aesthetic values. The course will illuminate the cultural, social, and political life in Ancient Greece. (Also listed as CLAS*2150).

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2220 The Visual Arts Today F (3-0) [0.50]**

This course is an introduction to contemporary visual culture, its current controversies and its historical roots. The avant-garde movements of the modern period and the impact of new technologies and media will be examined within a rich historical context. Topics will include international exhibitions, selling art, art and popular culture, censorship, and the relation between words and images.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Restriction(s):* ARTH*1220 This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

*Department(s):* School of Fine Art and Music

**ARTH*2280 Modern Architecture W (3-0) [0.50]**

This course is an investigation of architectural theory and practice within the social and spatial complexities of national and international life.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2290 History of Photographic Media S (3-0) [0.50]**

This course is an introduction to the history of photography through to its application in contemporary visual arts.

*Offering(s):* Offered through Distance Education format only.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2480 Introduction to Art Theory and Criticism F (3-0) [0.50]**

This course provides an overview of some of the most significant methodological approaches and critical practices used by art historians to write about visual culture. Traditional methods of art historical analysis include connoisseurship, iconography, and formalism. With these we will be exploring newer interpretative models and multidisciplinary approaches such as structuralism, semiotics, post-structuralism, and psychoanalytic theory as well as political theories such as feminism and socio-cultural theory.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Restriction(s):* This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

*Department(s):* School of Fine Art and Music

**ARTH*2490 History of Canadian Art F (3-0) [0.50]**

This course provides an overview of the visual arts in Canada from the earliest times to the present, with emphasis on the diverse contributions made by the First Nations, by French and British colonization, and by subsequent settlers from a very diverse range of cultural origins.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2540 Medieval Art F (3-0) [0.50]**

This course considers visual arts during a period when the Christian church built a new synthesis out of the legacies of the late Roman Empire and its "barbarian invaders".

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2550 The Italian Renaissance W (3-0) [0.50]**

This course will investigate the art, architecture, and visual and material culture of Renaissance Italy in its political, social, religious, intellectual and theoretical contexts. Topics include artistic training and practice; methods, materials and techniques of art-making; science and perspective; patronage; collectors and collecting; public monuments and domestic art; Renaissance theory; humanism; artistic biography; and other thematic contexts.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2580 Late Modern Art: 1900-1950 F (3-0) [0.50]**

This is a study of the historical avant-gardes in the social and political contexts of the period 1900-1950.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music

**ARTH*2600 Early Modern Art W (3-0) [0.50]**

This course is a study of visual culture as it was transformed by the revolutions - industrial, political, and colonial - of the eighteenth and nineteenth centuries.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 2.00 credits or (ARTH*1510 or ARTH*1520)

*Department(s):* School of Fine Art and Music
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Department(s)</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
<th>Offering(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTH*2950</td>
<td>Baroque Art W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>2.00 credits or (ARTH<em>1510 or ARTH</em>1520)</td>
<td>Offered in even-numbered years.</td>
<td>This course examines the role of images in sacred and secular contexts: manuscripts, reliquaries, architectural sculpture, tapestries, and liturgical display in Romanesque and Gothic Europe.</td>
</tr>
<tr>
<td>ARTH*3010</td>
<td>Contemporary Canadian Art F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in even-numbered years.</td>
<td>This course considers selected topics in the Renaissance and/or Baroque period(s), with emphasis on the political, social, economic, gendered, and aesthetic meanings of works of art.</td>
</tr>
<tr>
<td>ARTH*3060</td>
<td>Public Art W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This seminar course is designed to explore one or more issues in Art and Visual Culture depending on the expertise of the instructor. Students should consult the department for specific offerings.</td>
</tr>
<tr>
<td>ARTH*3150</td>
<td>Space: Roman Art and Urbanism W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course explores the role colour has played in the work of selected artists and periods.</td>
</tr>
<tr>
<td>ARTH*3200</td>
<td>Colour: Practice &amp; Meanings in Western Art F (3-0)</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This seminar course is designed to explore one or more issues in Art and Visual Culture depending on the expertise of the instructor. Students should consult the department for specific offerings.</td>
</tr>
<tr>
<td>ARTH*3210</td>
<td>Critical Issues in Art History W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History, including ARTH*2480</td>
<td>Offered in odd-numbered years.</td>
<td>This course considers issues of identity formation and representation as they intersect with the agendas and interests of the nation state. The course looks at questions of power and exclusion, theories of representation and notions of centre/paraphery, cultural hybridity and border-crossing in the age of globalization.</td>
</tr>
<tr>
<td>ARTH*3220</td>
<td>Nationalism &amp; Identity in Art F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>10.00 credits including 1.00 credits in Art History</td>
<td>Offered in even-numbered years.</td>
<td>This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.</td>
</tr>
<tr>
<td>ARTH*3310</td>
<td>Display: Visual Culture in Western Europe W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>10.00 credits including 1.00 credits in Art History</td>
<td>Offered in even-numbered years.</td>
<td>This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.</td>
</tr>
<tr>
<td>ARTH*3320</td>
<td>Lives: Aspects of Western Art W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This seminar course is designed to explore one or more issues in Art and Visual Culture depending on the expertise of the instructor. Students should consult the department for specific offerings.</td>
</tr>
<tr>
<td>ARTH*3330</td>
<td>English Art, 1750 to Present F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This seminar course is designed to explore one or more issues in Art and Visual Culture depending on the expertise of the instructor. Students should consult the department for specific offerings.</td>
</tr>
<tr>
<td>ARTH*3460</td>
<td>Idea: Art Since 1950 F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course provides an analysis of the visual arts of painting, sculpture, photographic media and non-traditional media World War II to the present. Selected artists of North America and Western Europe will be considered, as well as the institutions of the art world.</td>
</tr>
<tr>
<td>ARTH*3520</td>
<td>English Art, 1750 to Present F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course provides an analysis of the visual arts of painting, sculpture, photographic media and non-traditional media World War II to the present. Selected artists of North America and Western Europe will be considered, as well as the institutions of the art world.</td>
</tr>
<tr>
<td>ARTH*3620</td>
<td>English Art, 1750 to Present F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course provides an analysis of the visual arts of painting, sculpture, photographic media and non-traditional media World War II to the present. Selected artists of North America and Western Europe will be considered, as well as the institutions of the art world.</td>
</tr>
<tr>
<td>ARTH*3630</td>
<td>English Art, 1750 to Present F (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course provides an analysis of the visual arts of painting, sculpture, photographic media and non-traditional media World War II to the present. Selected artists of North America and Western Europe will be considered, as well as the institutions of the art world.</td>
</tr>
<tr>
<td>ARTH*3780</td>
<td>Gender and Art W (3-0) [0.50]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.</td>
</tr>
<tr>
<td>ARTH*3810</td>
<td>Topics in Art &amp; Visual Culture I W (3-0) [1.00]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.</td>
</tr>
<tr>
<td>ARTH*3820</td>
<td>Topics in Art &amp; Visual Culture II F (3-0) [1.00]</td>
<td>School of Fine Art and Music</td>
<td>3.00</td>
<td>7.50 credits or 1.50 credits in Art History</td>
<td>Offered in odd-numbered years.</td>
<td>This course considers how the practice and reception of the visual arts intersect with constructs of gender in contemporary and historical contexts.</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Prerequisite(s)</td>
<td>Restriction(s)</td>
<td>Department(s)</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>ARTH*4330</td>
<td>Topics in Art &amp; Visual Culture III W</td>
<td>1.00</td>
<td>10.00 credits including 1.00 credits in Art History at the 3000 level.</td>
<td></td>
<td>School of Fine Art and Music</td>
<td></td>
</tr>
<tr>
<td>ARTH*4340</td>
<td>Topics in Art &amp; Visual Culture IV F</td>
<td>1.00</td>
<td>10.00 credits including 1.00 credits in Art History at the 3000 level.</td>
<td></td>
<td>School of Fine Art and Music</td>
<td></td>
</tr>
<tr>
<td>ARTH*4350</td>
<td>Topics in Art &amp; Visual Culture V F</td>
<td>1.00</td>
<td>10.00 credits including 1.00 credits in Art History at the 3000 level.</td>
<td></td>
<td>School of Fine Art and Music</td>
<td></td>
</tr>
<tr>
<td>ARTH*4600</td>
<td>Individual Study - Art History S,F,W</td>
<td>0.50</td>
<td>14.00 credits, including 6 credits in Art History.</td>
<td>Instructor consent required.</td>
<td>School of Fine Art and Music</td>
<td></td>
</tr>
<tr>
<td>ARTH*4800</td>
<td>Experiential Learning F.W</td>
<td>0.50</td>
<td>A minimum of 14.00 credits including 2.50 credits in Art History.</td>
<td>Registration is limited to students registered in BA:ARTH specializations with a minimum cumulative average of 70% in all Art History course attempts. Instructor consent required.</td>
<td>School of Fine Art and Music</td>
<td></td>
</tr>
</tbody>
</table>
XII. Course Descriptions, Arts and Sciences

Arts and Sciences

Dean's Office, College of Arts

Registration in ASCI* courses is limited to students in the Bachelor of Arts and Sciences degree program.

ASCI*1110 Society and Inquiry I F (3-0) [0.50]

Through a series of historical and/or current case studies, this course introduces students to the ways in which social forces interact with inquiry. Students learn how to locate, present and critically evaluate evidence. This course also introduces students to the importance of good academic conduct and accountability in their work.

Prerequisite(s): ASCI*1000
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*1120 Society and Inquiry II W (3-0) [0.50]

Through a series of historical and/or current case studies, students will continue to explore the ways in which social forces shape inquiry. Students will learn to balance the weight of evidence from multiple sources and present those findings both orally and in writing.

Prerequisite(s): ASCI*1110
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*2050 Uses of Knowledge F (3-0) [0.50]

This course explores the ways in which academic knowledge can be transferred, translated and mobilized to the world and used to remedy social problems. Through historical and/or current case studies and using the knowledge acquired in their two minors, students will learn to assess and defend conflicting points of view both in written and oral formats. Through group exercises, students will learn to work collaboratively and envision themselves as engaged citizens.

Prerequisite(s): ASCI*1120
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*3000 Arts and Sciences Community Project F (3-0) [0.50]

This course integrates the curricular, co-curricular and cross-disciplinary strands of the Arts and Sciences program through continued academic study and its application, modification, and critique in a community context. Students will conduct research and seminars on a selected topic while simultaneously completing a placement in a community agency appropriate to that topic. (See the B.A.S. program website for topics.)

Prerequisite(s): ASCI*2000 or ASCI*2050
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*3100 Case Studies in Arts and Sciences Research W (3-0) [0.50]

This variable-content course introduces students to case studies in the integration of academic knowledge and practices with social movements, investigating the ways in which cultural, social, and scientific endeavours meet to work on real-world problems. The course may contain both historical and current case studies.

Prerequisite(s): ASCI*2000 or ASCI*2050
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*3200 Issues in Public Health S (3-0) [0.50]

This course examines the practice of public health in Canada, and throughout the world, with an emphasis on the impact of social and political forces on matters relating to public health. As well, the course considers strategies for the delivery of initiatives to safeguard the health of the public.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 8.50 credits
Department(s): Dean's Office, College of Arts

ASCI*3700 Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]

This course offers an opportunity for individual students to pursue unique curricular opportunities when they arise and are approved as appropriate to B.A.S. students (e.g., independent reading and/or research under a faculty member's supervision in a research lab or program; a course taken while studying on exchange or abroad; a course developed in conjunction with experiential learning situations, etc.) See the B.A.S. website for learning contracts and other requirements that must be completed well in advance to permit registration for independent studies.

Prerequisite(s): A minimum of 9.00 credits.
Restriction(s): Registration in the BAS degree program. Instructor consent required.
Department(s): Dean's Office, College of Arts

ASCI*4010 Arts and Sciences Honours Research Seminar W (3-0) [1.00]

Under faculty supervision students will devise and research a topic, and then plan, develop, peer-edit and complete a major paper. Designed to function as a senior-level writing seminar, this course is particularly recommended to students who plan to pursue graduate study and who have a cumulative average of at least 75%.

Prerequisite(s): 12.00 credits, including (1 of ASCI*3000, ASCI*3100, ASCI*3200, ASCI*3700); cumulative average of 75%
Restriction(s): ASCI*4000 Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*4020 Topics in Arts and Sciences Research F,W (3-0) [0.50]

This variable-content course provides a senior-level seminar experience in the conduct, presentation, and writing of research relevant to the interdisciplinary core of the Bachelor of Arts and Sciences degree program. (See the B.A.S. website for topics.)

Prerequisite(s): 12.00 credits including (ASCI*2000 or ASCI*2050)
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*4030 Topics in Arts and Sciences Research F,W (3-0) [0.50]

This variable-content course provides a senior-level seminar experience in the conduct, presentation, and writing of research relevant to the interdisciplinary core of the Bachelor of Arts and Sciences degree program. (See the B.A.S. website for topics.)

Prerequisite(s): 12.00 credits including (ASCI*2000 or ASCI*2050)
Restriction(s): Registration in the BAS degree program.
Department(s): Dean's Office, College of Arts

ASCI*4700 Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]

This course continues work undertaken in ASCI*4700, and will normally be planned in concert with planning for ASCI*4700. This course offers an opportunity for individual students to pursue unique curricular opportunities when they arise and are approved as appropriate to B.A.S. students. See the B.A.S. website for learning contracts and other requirements that must be completed well in advance to permit registration for independent studies.

Prerequisite(s): ASCI*4700
Restriction(s): Registration in the BAS degree program. Instructor consent required.
Department(s): Dean's Office, College of Arts

ASCI*4710 Independent Studies in Arts/Sciences S,F,W (3-0) [0.50]

This course continues work undertaken in ASCI*4700, and will normally be planned in concert with planning for ASCI*4700. This course offers an opportunity for individual students to pursue unique curricular opportunities when they arise and are approved as appropriate to B.A.S. students. See the B.A.S. website for learning contracts and other requirements that must be completed well in advance to permit registration for independent studies.

Prerequisite(s): ASCI*4700
Restriction(s): Registration in the BAS degree program. Instructor consent required.
Department(s): Dean's Office, College of Arts
## Biochemistry

### BIOC*2580 Introduction to Biochemistry S,F,W (3-3) [0.50]

This course introduces students to the evolution, chemical structure, and biological roles of the major molecular components of the cell: including proteins, nucleic acids, lipids, and carbohydrates. Topics and processes integrated through understanding biological macromolecules include enzymology and intermediary metabolism, with emphasis on catabolic processes. Students will gain basic investigative skills through hands-on experiences in a laboratory setting.

**Prerequisite(s):** CHEM*1050  
**Department(s):** Department of Molecular and Cellular Biology

### BIOC*3560 Structure and Function in Biochemistry F,W (3-0) [0.50]

This course develops the understanding of biochemical processes by examining the molecular mechanisms underlying the regulation of specific cellular and physiological systems. Examples may include: oxygen binding and transport; regulation of enzyme function; carbohydrate and lipid metabolic pathways and metabolic integration; structure of membranes and membrane proteins; and membrane transport and signaling.

**Prerequisite(s):** BIOC*2580  
**Department(s):** Department of Molecular and Cellular Biology

### BIOC*3570 Analytical Biochemistry S,F (3-4) [0.75]

This course covers the tools and techniques by which biological molecules are isolated, separated, identified, and analyzed. Detailed discussion of experimental methods for macromolecule purification and characterization is included.

**Prerequisite(s):** (CHEM*2400 or CHEM*2480), BIOC*2580  
**Department(s):** Department of Molecular and Cellular Biology

### BIOC*4520 Metabolic Processes F (3-0) [0.50]

This course is an in-depth study of the role of bioenergetics, regulation, and chemical mechanisms in carbohydrate, lipid, and nitrogen metabolism.

**Prerequisite(s):** BIOC*3560 or BIOC*3570  
**Department(s):** Department of Molecular and Cellular Biology

### BIOC*4540 Enzymology W (3-3) [0.75]

This is a laboratory-intensive course where the topics studied include enzyme active sites and the mechanisms of enzyme action; enzyme kinetics and regulation; recombinant proteins and site-directed mutagenesis as tools for understanding enzymes.

**Prerequisite(s):** BIOC*3560 (may be taken concurrently), BIOC*3570  
**Department(s):** Department of Molecular and Cellular Biology

### BIOC*4580 Membrane Biochemistry W (3-0) [0.50]

This course is a molecular examination of the structure and functions of cell membranes, cell surfaces and associated structures. Topics may include: membrane lipids; membrane protein structure; membrane transporters; ATP production; cytoskeleton; cell surface carbohydrates; membrane biogenesis; signal transduction.

**Prerequisite(s):** BIOC*3560 or BIOC*3570  
**Department(s):** Department of Molecular and Cellular Biology
XII. Course Descriptions, Biology

Biology

Department of Human Health and Nutritional Sciences
Department of Molecular and Cellular Biology
Department of Plant Agriculture

BIOL*1050 Introduction to Biology F (3-2) [0.50]
This course will introduce important concepts concerning the organization of life, from cells to ecosystems. The dynamic and interactive nature of all living systems will be emphasized. This course will be valuable for students without Grade 12 or 4U Biology who are interested in environmental issues, medicine, advances in biotechnology and related topics.
Restriction(s): BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090
Department(s): Department of Integrative Biology, Department of Molecular and Cellular Biology

BIOL*1070 Discovering Biodiversity F,W (3-0) [0.50]
This course strongly emphasizes participatory and self-directed learning, problem solving, reasoning and exposure to primary research literature and will address key concepts in evolution, plant and animal structure, physiology and ecology. Students lacking Grade 12 or 4U Biology should consult with their program counsellor prior to taking BIOL*1050 in first semester.
Department(s): Department of Plant Agriculture, Department of Animal Biosciences

BIOL*1080 Biological Concepts of Health F,W (3-1) [0.50]
This course will define the physiology of the individual as the biological foundation of health and focus on selected studies of health and illness in the adult human. Students will derive an understanding of the biological foundation of their own health as an adult and will be encouraged to expand the concepts and processes of individual health to human populations, animals and the environment. Through lectures, laboratories, small group tutorials and an individual research project, students will gain an introduction to research in the health sciences. Students lacking Grade 12 or 4U Biology should consult with their program counsellor prior to taking BIOL*1080 in first semester.
Department(s): Department of Human Health and Nutritional Sciences

BIOL*1090 Introduction to Molecular and Cellular Biology F,W (3-0) [0.50]
This course will foster an understanding of key concepts in molecular and cell biology and genetics including evolution, relationship between structure and function, energy and regulation, interrelatedness of life, and the nature of science. By relating these concepts to their daily lives, through analysis of problems and tutorial discussions, students will develop an understanding of five central themes: 1) all living things share common properties, 2) the cell is the fundamental functional unit of life, 3) managing energy is central to success, 4) genes are the fundamental information unit of life, and 5) heredity. Students lacking Grade 12 or 4U Biology should consult with their program counsellor prior to taking BIOL*1090 in first semester.
Department(s): Department of Molecular and Cellular Biology

BIOL*1500 Humans in the Natural World F,W (3-0) [0.50]
This course will examine past and present human interactions with Nature from an ecological perspective. It investigates current global issues that require multi-disciplinary environmental analysis.
Offering(s): Also offered through Distance Education format.
Restriction(s): Students in the BAS, BSC and BSC(ENV) program cannot take this course for credit.
Department(s): Department of Integrative Biology

 BIOL*2060 Ecology S,F,W (3-1) [0.50]
This course discusses the ecology of plants, animals, fungi and bacteria as individual organisms, interacting populations, communities and ecosystems. Lectures and discussion groups are used to demonstrate the difficulty of interpreting ecological data derived from field studies. The value of laboratory-based research in ecology will also be discussed. The course will be important for anyone who wishes to understand what we know and need to know about the way ecological systems work.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 4.00 credits including BIOL*1070
Restriction(s): BIOL*3110, BIOL*3120
Department(s): Department of Integrative Biology

BIOL*2400 Evolution F,W (3-0) [0.50]
This course provides a broad overview of evolutionary biology. It examines the concepts and mechanisms that explain evolutionary change and the evolution of biological diversity at different levels of biological organization (gene to ecosystem) and across space and time. It also introduces historical forms of scientific inquiry, unique to biology. The course is designed to be of interest to students with general interests in science and in research in all areas of biology.
Prerequisite(s): BIOL*1070, BIOL*1090
Restriction(s): BIOL*3400
Department(s): Department of Integrative Biology

BIOL*3010 Laboratory and Field Work in Ecology F (0-6) [0.50]
This course emphasizes field and laboratory work in ecology. Students will gain experience with experimental designs, sampling, analysis and interpretation of data collected to answer ecological questions. Local field sites will be used to run in-course experiments.
Critical thinking about ecological issues relevant to society will be emphasized.
Prerequisite(s): BIOL*2060, (STAT*2040 or STAT*2230)
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the BSc Academic Advising website: http://www.bsc.uoguelph.ca/ for more information.
Department(s): Department of Integrative Biology

BIOL*3020 Population Genetics F (3-2) [0.50]
This course is designed to explore the concepts of random mating, inbreeding, random drift, assortative mating and selection as they relate to natural populations. The dynamic genetic structure of populations and its relationship to the process of speciation is examined. The role and significance of molecular genetics as it relates to population genetics, evolution, systematics and phylogeny is also considered.
Prerequisite(s): MBG*2040
Department(s): Department of Integrative Biology

BIOL*3040 Methods in Evolutionary Biology W (2-2) [0.50]
This course will provide students with an understanding of some of the major analytical approaches used in modern evolutionary biology and an appreciation of the relevance of these methods to other branches of the life sciences. This includes the analysis of molecular data, phylogenetics and “tree thinking”, population genetics, genomics, phenotypic selection, experimental evolution, and hypothesis generation and testing in historical sciences. In addition to lectures, laboratory sessions will be devoted to practical training in analytical tools using specialized computer software and real datasets. Students will also be exposed to recent scientific literature and will undertake an independent project in order to experience these approaches in action.
Prerequisite(s): BIOL*2400
Department(s): Department of Integrative Biology

BIOL*3060 Populations, Communities & Ecosystems W (4-0) [0.50]
This course will explore advanced topics in ecology, building on the foundation provided by BIOL*2060. The course material will be organized around common mechanisms that link ecological processes across levels of organization, such as organism function, species interactions, spatial connectivity and energetic transfers across trophic levels. Emphasis will be on testing ecological theory with quantitative analysis of empirical data, thereby gaining greater depth of understanding of ecological processes at the population, community and ecosystem scales. Through the examination of case studies, students will apply ecological knowledge and quantitative analysis to problem solving in areas such as resource management, conservation of populations and communities, and predicting biosphere responses to climate change.
Prerequisite(s): 10.00 credits including BIOL*2060, (1 of GEOG*2460, STAT*2040, STAT*2060, STAT*2230)
Restriction(s): BIOL*3110 BIOL*3120
Department(s): Department of Integrative Biology

Last Revision: March 4, 2016
2016-2017 Undergraduate Calendar
**BIOL*3130 Conservation Biology W (3-0) [0.50]**

This course is an introduction to the biological basis for conserving wild, living resources, including freshwater and marine fish, plants and wild life. Topics to be covered include principles of population, community and landscape genetics and ecology relevant to the conservation, restoration and management of endangered species, ecosystems and/or renewable resources, including an introduction to the theory and practice of sustained-yield harvesting.

*Prerequisite(s):* BIOL*2060 or BIOL*3110  
*Department(s):* Department of Integrative Biology

**BIOL*3300 Applied Bioinformatics W (3-2) [0.50]**

This course covers current methods for making use of large molecular data sets to identify the genes that control traits, to characterize genes' functions, and to infer genetic relationships among individuals. It focuses on case studies and current research in agriculture and medicine to introduce molecular data analysis methods, including analyzing molecular markers, constructing nucleotide and protein sequence alignments, constructing phylogenies, and finding motifs and genes in biological sequences. Lab sessions include an introduction to Unix and Perl for the biologist and hands-on use of several molecular data analysis programs.

*Prerequisite(s):* BIOL*1070, CHEM*1050, ZOO*2700  
*Department(s):* Department of Plant Agriculture

**BIOL*3450 Introduction to Aquatic Environments F (3-0) [0.50]**

This course provides an introduction to the structure and components of aquatic ecosystems, how they are regulated by physical, chemical and biological factors, and the impact of humans on these environments and their biota.

*Prerequisite(s):* BIOL*1070, CHEM*1050, ZOO*2700 is strongly recommended  
*Department(s):* Department of Integrative Biology

**BIOL*3650 Applications in Biology W (3-0) [0.50]**

In this course, students will explore selected topics related to the application of biological knowledge and techniques in society, such as biotechnology, forensic science, conservation biology, agriculture, health care, public health, and wildlife biology. Different topics are offered each year, reflecting the particular research or professional interest of the course instructor. Upcoming topics will be posted on the B.Sc. Advising and CBS-ADA websites.

*Prerequisite(s):* 9.00 credits including (2 of BIOL*1070, BIOL*1080, BIOL*1090)  
*Restriction(s):* Restricted to students in BIOC, BIOL-C, BIOD, BIOS, BIOM, ECOL, ECOL-C, HK, MBF, MICR, MICR-C, MBG, NANS, WBC, ZOO.  
*Department(s):* Department of Integrative Biology

**BIOL*4010 Adapational Physiology W (3-0) [0.50]**

This course examines adaptations of organisms to various aquatic and terrestrial environments. A mechanistic approach will be used to establish the strategies (anatomical, physiological, biochemical) of environmental adaptation. Examples will include adaptations of deep-sea and polar organisms, adaptations to salinity and desiccation challenges, oxygen availability, sensory adaptations and symbiotic adaptations.

*Co-requisite(s):* ZOO*3210 or ZOO*3620  
*Department(s):* Department of Integrative Biology

**BIOL*4110 Ecological Methods F (3-3) [1.00]**

This course will examine the theoretical and practical aspects of research methods in ecology. Emphasis will be placed on experimental design, sampling, population estimation, statistical inference, and characteristics of producers and consumers. Students will participate in research projects of their own design, and will gain experience in preparing research proposals, research papers and posters, and making oral presentations.

*Prerequisite(s):* BIOL*3010, (1 of BIOL*3060, BIOL*3110, BIOL*3120 ), (STAT*2040 or STAT*2230)  
*Restriction(s):* Restricted to students in BSCH,WBC and Ecology majors/minors  
*Department(s):* Department of Integrative Biology

**BIOL*4120 Evolutionary Ecology W (4-0) [0.50]**

This course is an examination of common ecological circumstances faced by plants and animals and the morphological, behavioral and life history characteristics that have evolved in response. Particular emphasis will be placed on evolutionary processes and on adaptive aspects of thermoregulation, foraging strategies, spatial distribution, social and reproductive strategies. The course will emphasize both the theoretical basis and the empirical evidence for ecological adaptation.

*Prerequisite(s):* (BIOL*2060 or BIOL*3110 ), (BIOL*2400 or BIOL*3400 )  
*Department(s):* Department of Integrative Biology

**BIOL*4150 Wildlife Conservation and Management F (3-0) [0.50]**

This course builds on previous courses in population and community ecology to evaluate the long-term dynamics of threatened populations in the context of human intervention. The course will also provide a "hands-on" introduction to computer modeling, with application to contemporary issues in population ecology and resource management. Lectures will be drawn from the following topics: growth and regulation of populations, long-term persistence of ecological communities, harvesting, bio-economics, and habitat modification.

*Prerequisite(s):* (1 of BIOL*3060, BIOL*3110, BIOL*3130)  
*Department(s):* Department of Integrative Biology

**BIOL*4350 Limnology of Natural and Polluted Waters F (3-3) [0.50]**

This course will familiarize students with the characteristics and methods of study of the limnology of natural and polluted aquatic ecosystems. The laboratory includes methods of biological, chemical and physical assessment such as field surveys of algal, macrophyte and benthic invertebrate diversity, toxicity assays, and analyses of stream flow.

*Prerequisite(s):* BIOL*3450  
*Department(s):* Department of Integrative Biology

**BIOL*4410 Field Ecology F (3-3) [0.75]**

This is a 12-day field course held in Algonquin Park, Ontario, during August. Students independently conduct and write reports about 2 research projects of their choice and design (in consultation with faculty members), on any of; vertebrate, invertebrate, plant ecology, and/or behaviour, in terrestrial or aquatic habitats. Emphasis is placed upon students asking ecological questions, designing experiments, and then collecting data from intensive field work. There are no formal lectures, but an organizational meeting is held in the winter semester prior to the field course. The charge by the field station for room and board will be passed on to the student. Students are also responsible for their own transportation to and from the field station. A departmental application form must be submitted for approval at least 4 weeks prior to the last day of course selection for the Summer semester, and the signature of the course coordinator will be required to select the course. This course must be recorded as part of your Fall course selection and tuition and compulsory fees will be calculated accordingly. Students taking this course DO NOT use course numbers reserved for Ontario Universities Program in Field Biology. Detailed information is available from the Department of Integrative Biology.

*Prerequisite(s):* 0.50 credits in ecology  
*Restriction(s):* Instructor consent required.  
*Department(s):* Department of Integrative Biology

**BIOL*4500 Natural Resource Policy Analysis W (3-0) [0.50]**

This course explores the role of science in management decision-making for Canadian renewable natural resources, including legal, political, social and economic factors. The course will rely on active learning by students working in collaborative groups, leading to deeper understanding of real-world issues while developing professional skills that are essential for those who wish to make significant contributions at the science-management interface. Four themes will be explored: 1) acts/policies/guidelines, 2) science and other knowledge systems, 3) management strategy evaluation, and 4) decision analysis & adaptive management.

*Prerequisite(s):* 15.00 credits including BIOL*4150  
*Restriction(s):* Registration in Semester 7 or 8, BIOL*4040 , ZOO*4050  
*Department(s):* Department of Integrative Biology

**BIOL*4610 Arctic Ecology F (1-6) [0.75]**

This three-week field course provides an opportunity to study the flora and fauna of marine, freshwater and terrestrial environments of the high Arctic. Based in the high Arctic, the course includes lectures, field exercises and student projects. An information session is held in January; students are required to register before March. Signature of course coordinator is required for course selection. Students are responsible for cost of food and transportation. This course must be recorded as part of your Fall course selection and tuition and compulsory fees will be calculated accordingly. Students taking this course DO NOT use course numbers reserved for Ontario Universities Program in Field Biology. Detailed information is available from the Department of Integrative Biology.

*Offering(s):* Offered in even-numbered years.  
*Prerequisite(s):* BIOL*2060 or BIOL*3110  
*Restriction(s):* Instructor consent required.  
*Department(s):* Department of Integrative Biology
### BIOL*4700 Field Biology S,F,W (1-6) [0.50]

Students may apply for 2-week courses in the OUPFB (Ontario Universities Program in Field Biology). This program offers a diversity of field courses in biological subjects ranging from the Arctic to the Tropics, microbes to mammals, and covering marine, freshwater and terrestrial habitats. Costs include food and lodging and may include transportation. Detailed information is available from the Department of Integrative Biology.

**Prerequisite(s):** BIOL*2060 or BIOL*3110  
**Restriction(s):** Permission of the course coordinator. Instructor consent required.  
**Department(s):** Department of Integrative Biology

### BIOL*4710 Field Biology S,F,W (1-6) [0.25]

Students may apply for 1-week courses in the OUPFB (Ontario Universities Program in Field Biology). This program offers a diversity of field courses in biological subjects ranging from the Arctic to the Tropics, microbes to mammals, and covering marine, freshwater and terrestrial habitats. Costs include food and lodging and may include transportation. Detailed information is available from the Department of Integrative Biology.

**Prerequisite(s):** BIOL*2060 or BIOL*3110  
**Restriction(s):** Permission of the course coordinator. Instructor consent required.  
**Department(s):** Department of Integrative Biology

### BIOL*4800 Field Biology S,F,W (1-6) [0.50]

Students may apply for 2-week courses in the OUPFB (Ontario Universities Program in Field Biology). This program offers a diversity of field courses in biological subjects ranging from the Arctic to the Tropics, microbes to mammals, and covering marine, freshwater and terrestrial habitats. Costs include food and lodging and may include transportation. Detailed information is available from the Department of Integrative Biology.

**Prerequisite(s):** BIOL*2060 or BIOL*3110  
**Restriction(s):** Permission of the course coordinator. Instructor consent required.  
**Department(s):** Department of Integrative Biology

### BIOL*4810 Field Biology S,F,W (1-6) [0.25]

Students may apply for 1-week courses in the OUPFB (Ontario Universities Program in Field Biology). This program offers a diversity of field courses in biological subjects ranging from the Arctic to the Tropics, microbes to mammals, and covering marine, freshwater and terrestrial habitats. Costs include food and lodging and may include transportation. Detailed information is available from the Department of Integrative Biology.

**Prerequisite(s):** BIOL*2060 or BIOL*3110  
**Restriction(s):** Permission of the course coordinator. Instructor consent required.  
**Department(s):** Department of Integrative Biology

### BIOL*4900 Field Biology S,F,W (1-6) [0.50]

Students may apply for 2-week courses in the OUPFB (Ontario Universities Program in Field Biology). This program offers a diversity of field courses in biological subjects ranging from the Arctic to the Tropics, microbes to mammals, and covering marine, freshwater and terrestrial habitats. Costs include food and lodging and may include transportation. Detailed information is available from the Department of Integrative Biology.

**Prerequisite(s):** BIOL*2060 or BIOL*3110  
**Restriction(s):** Permission of the course coordinator. Instructor consent required.  
**Department(s):** Department of Integrative Biology
Biomedical Sciences

Department of Biomedical Sciences

Some Biomedical Science courses are Priority Access Courses and enrollment may be restricted to particular programs or specializations. See department for more information.

Additional course listings may be found in the course descriptions for Toxicology and Veterinary Medicine.

BIOM*2000 Concepts in Human Physiology S,F,W (3-0) [0.50]

This is an introductory course that examines the fundamental integrative aspects of human physiological systems and their role in the maintenance of homeostasis. Course content is intended to serve the needs of non-bioscience students and includes the study of aspects of cellular metabolism, nerve and muscle function and general anatomy and function of the cardiovascular, respiratory, gastrointestinal, immune, central and peripheral nervous, endocrine, renal and reproductive systems. This course cannot be used to fulfill requirements for any biological science minor. (Also offered through Distance Education format.)

Restriction(s): ANSC*3080, BIOM*3200, HK*2810, HK*3940, ZOO*3200, ZOO*3210, ZOO*3600 Not available to BSC Students in biological science specializations or BAS program.

Department(s): Department of Biomedical Sciences

BIOM*3000 Functional Mammalian Neuroanatomy W (3-2) [0.50]

The main objective of the course is to understand the functional organization of the mammalian nervous system. It includes a review of the major cell types found in the nervous system and an overview of the basic physiological principles of brain function followed by a detailed three dimensional and histological examination of the mammalian brain and spinal cord. Emphasis is placed on understanding the relationship between anatomy, physiology and behaviour.

Prerequisite(s): 1 of BIOM*3200, HK*3810, HK*3940, PHYS*2030, PSYC*2410, ZOO*3200, ZOO*3600

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*3010 Biomedical Comparative Anatomy F (2-3) [0.50]

This lecture and laboratory course is designed for students interested in the biomedical and health sciences. Labs provide an introduction to veterinary anatomy, with small and large animal dissections. Human and clinical veterinary anatomy, as well as biomechanical and functional differences are considered.

Prerequisite(s): 2 of BIOL*1070, BIOL*1080, BIOL*1090

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*3040 Medical Embryology W (3-3) [0.75]

The patterns and principles of normal embryonic and fetal development of mammals are covered with an emphasis on comparison to adult anatomy and medical implications. In laboratories, the teratology of prenatal anomalies are also examined. There is a focus on gathering embryological information and developing scientific reasoning skills through essays and presentations.

Prerequisite(s): (BIOL*1070, BIOL*1090), (1 of BIOL*1080, BIOM*3200, HK*3810, HK*3940), (1 of BIOM*3010, HK*3401, HK*3501, ZOO*2090)

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*3090 Principles of Pharmacology S,F,W (3-0) [0.50]

This course will introduce students to the basic principles of pharmacology. Topics to be covered include pharmacokinetics and drug-receptor interactions as well as the mechanism of action and toxicity of drugs acting on the cardiovascular and central nervous system.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): BIOM*2580, (1 of ANSC*3080, BIOM*3200, HK*3810, HK*3940, ZOO*3200, ZOO*3600)

Department(s): Department of Biomedical Sciences

BIOM*3200 Biomedical Physiology S,F,W (6-0) [1.00]

This course focuses on the normal functioning of mammals. The physiology of the nervous, endocrine, reproductive, cardiovascular and digestive systems and homeostasis as reflected in respiratory and renal function is treated in a detailed manner. The integrative nature of various physiological systems is highlighted and cellular and molecular information is incorporated to enhance the understanding of these systems. Aspects of medically significant changes in the mammalian physiological systems are also introduced.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): BIOC*2580

Restriction(s): HK*3940

Department(s): Department of Biomedical Sciences

BIOM*3210 Critical Thinking in the Health Sciences F (3-0) [0.50]

This course will explore a variety of issues related to the scientific ideals and practical realities of health sciences research and its clinical applications. Topics will include critical thinking, critical appraisal of the medical literature, the principles of evidence based medicine, and selected issues related to scientific integrity.

Prerequisite(s): BIOM*4210. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*3430 Endocrine Physiology W (3-0) [0.50]

The course is designed to provide a senior level introduction to the endocrine discipline, focusing largely on mammals, with some examples taken from other vertebrate taxa. The course will give an introduction to the historical developments in the discipline, explore the actions of hormones and other chemical signalling pathways, and examine processes of hormone synthesis and secretion. The focus of the course will be the integrative nature of hormone actions in the regulations of various physiological processes in animal systems, such as metabolic control, growth, and reproduction. The course will also explore aspects of "non-classical" endocrinology, endocrine dysfunctional states and emerging environmental concerns related to endocrine dysfunction.

Prerequisite(s): BIOC*2580, 1 of BIOM*3200, HK*3810, HK*3940, ZOO*3200, ZOO*3600

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*4050 Biomedical Aspects of Aging W (3-0) [0.50]

Aging is accompanied by alterations in the biophysical and biochemical functioning of body organ systems. The relationship between aging and the cardiovascular, respiratory, digestion/nutrition and reproductive systems will be discussed as will homeostatic functions associated with bone metabolism and fluid balance.

Prerequisite(s): 1 of BIOM*3200, HK*3810, HK*3940

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the department of Biomedical Sciences website for more information.

Department(s): Department of Biomedical Sciences

BIOM*4070 Biomedical Histology F (2-3) [0.50]

This histology course is designed for students interested in biomedical sciences. Basic tissue types and major organ systems of mammals will be examined using virtual microscopy. Lectures and discussions will focus on the relationship of tissue structure to cell and organ functions and the effects of injury or disease on microscopic structure.

Prerequisite(s): (MCB*2050 or MCB*2210), (1 of ANSC*3080, BIOM*3200, HK*3810, HK*3940)

Restriction(s): ZOO*3000 This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

Department(s): Department of Biomedical Sciences

BIOM*4090 Pharmacology S,F,W (3-0) [0.50]

Topics covered in this course include drugs used in the treatment of inflammatory, allergic, hormonal, infectious, neoplastic and hemorrhagic/thromboembolic disease. The focus will be on drug targets and mechanisms of action that explain therapeutic and toxicological effects.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): BIOM*3090

Department(s): Department of Biomedical Sciences
### BIOM*4110 Mammalian Reproductive Biology W (2-2) [0.50]
This multidisciplinary course provides an introduction to various aspects of mammalian reproduction of medical and veterinary significance. The course will cover the normal physiology and gross and microscopic anatomy of the female and male reproductive systems. Placentaion, pregnancy and post-partum physiology will also be addressed. The impact of the reproductive biology on social and economic issues will be discussed.

**Prerequisite(s):** (1 of BIOM*3010, HK*3401, HK*3501, ZOO*2090), (1 of BIOM*3200, HK*3810, HK*3940, ZOO*3210, ZOO*3620), (BIOM*4070 or ZOO*3000)

**Department(s):** Department of Biomedical Sciences

### BIOM*4150 Cancer Biology W (5-0) [0.50]
The main objective of this course is to familiarize students with general concepts in cancer biology. Each topic is presented as an overview, emphasizing recent developments in the field. There is additional focus on developing scientific skills, including critical analysis of current literature and the ability to give logical and concise oral presentations.

**Prerequisite(s):** MBG*2040, MCB*2050, (1 of BIOM*3040, BIOM*4070, ZOO*3000)

**Department(s):** Department of Biomedical Sciences

### BIOM*4180 Cardiology W (3-0) [0.50]
This course will explore the concepts and principles of normal heart function, with a focus on the molecular and cellular basis of cardiac physiology. These elements will be further developed by examining changes that occur in a range of cardiovascular diseases and conditions.

**Prerequisite(s):** (1 of BIOM*3200, HK*3810, HK*3940), (1 of BIOM*3010, HK*3401, HK*3501, ZOO*2090)

**Restriction(s):** Registration in the BSC.BIOM Major.

**Department(s):** Department of Biomedical Sciences

### BIOM*4300 Biomedical Communications F (3-0) [0.50]
The primary purpose of this course is to develop students' ability to communicate scientific information logically and concisely, in written and oral formats. Students will be taught the basic principles underlying logical development of scientific arguments and hypotheses. Using practical examples drawn from current scientific literature, students will be exposed to the methods currently used by scientists in researching their subjects and writing about them in an effective fashion. Through written and oral presentation assignments, students will develop the skills necessary to confidently develop scientific presentations and communicate their knowledge and ideas to others.

**Prerequisite(s):** 14.00 credits including BIOL*1080, STAT*2040

**Restriction(s):** Restricted to students in BSCH.BIOM.

**Department(s):** Department of Biomedical Sciences

### BIOM*4500 Literature-based Research in Biomedical Sciences S,F,W (0-6) [0.50]
This course involves independent literature research of a current topic in any of the biomedical sciences (such as anatomy, physiology, pharmacology, toxicology, genetics, biochemistry). Students will present critical appraisals of primary research literature and are required to submit an annotated bibliography and research proposal in addition to their publication-quality literature review paper. Students work under the supervision of individual faculty. Faculty consent must be obtained prior to being admitted into the course by the course coordinator.

**Prerequisite(s):** 12.00 credits

**Restriction(s):** HK*4230 Instructor consent required. Enrolment restricted to BSC.BIOM majors or BSC.NEUR minors.

**Department(s):** Department of Biomedical Sciences

### BIOM*4510 Research in Biomedical Sciences S,F,W (0-12) [1.00]
In this course students will conduct and individual research project on a current topic in any of the biomedical sciences (such as anatomy, physiology, pharmacology, toxicology, genetics, biochemistry). Students work under the supervision of individual faculty. Faculty consent must be obtained prior to being admitted into the course by the course coordinator.

**Prerequisite(s):** 14.00 credits

**Restriction(s):** BIOM*4521/2 Instructor consent required. Enrolment restricted to BSC.BIOM majors.

**Department(s):** Department of Biomedical Sciences

### BIOM*4521 Research in Biomedical Sciences F (0-12) [1.00]
This is the first part of the two-semester course BIOM*4521/2. Refer to BIOM*4521/2 for the complete course description.

**Prerequisite(s):** 14.00 credits

**Restriction(s):** BIOM*4510 Instructor consent required. This is a Priority Access Course. Enrolment may be restricted to particular programs. See department for more information.

**Department(s):** Department of Biomedical Sciences

### BIOM*4522 Research in Biomedical Sciences S-W (0-12) [1.00]
This is the second part of the two-semester course BIOM*4521/2. Refer to BIOM*4521/2 for the complete course description.

**Prerequisite(s):** BIOM*4521

**Department(s):** Department of Biomedical Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT*1200</td>
<td>Plants and Human Use W (3-0) [0.50]</td>
<td></td>
<td>This course will examine past and present interactions between humans and plants with emphasis on major changes in civilization and cultures as a result of these interactions. The approach will be to consider several case studies of how unique structural and chemical properties of various plant organs have played a role in their use by humans. Not an acceptable course for students in B.SC. Biological Sciences Programs, B.A.S. Program, B.SC. (ENV.) or B.SC. (AGR.) Programs. Restriction(s): BIOL*1050. Department(s): Department of Plant Agriculture</td>
</tr>
<tr>
<td>BOT*2000</td>
<td>Plants, Biology and People W (3-0) [0.50]</td>
<td></td>
<td>The course deals with the biology of plant species of historical and cultural importance. It will focus on plants used as a source of drugs, herbal medicines, industrial raw materials, food products, perfumes and dyes. Examples of plant products that will be looked at include cocaine, chocolate, tea, opium, hemp and ginseng. The relevant morphology, physiology, distribution and ethnobotany of these plant species will be discussed. Offering(s): Also offered through Distance Education format. Prerequisite(s): BIOL<em>1050 or BIOL</em>1070. Restriction(s): BOT*1200. Department(s): Department of Plant Agriculture</td>
</tr>
<tr>
<td>BOT*2100</td>
<td>Life Strategies of Plants F,W (3-3) [0.50]</td>
<td></td>
<td>This course introduces the structures and processes used by plants in the greening of our planet, and how and why plants are basic to the functioning of the biosphere. This course includes hands-on experience in examining the cells, tissues and architectures of plants as well as selected processes of plant function. Prerequisite(s): 2 of BIOL<em>1050, BIOL</em>1070, BIOL<em>1080, BIOL</em>1090. Department(s): Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>BOT*3050</td>
<td>Plant Functional Ecology F (3-3) [0.50]</td>
<td></td>
<td>This course integrates fundamental and applied aspects of plant ecology, focusing on the roles of functional traits, physiological mechanisms, life history strategies, abiotic constraints, and biotic interactions in influencing plant distribution and abundance. Specific topics include physiological ecology, growth and allocation patterns, influence of biotic and trophic interactions [pollinators, pathogens, herbivores, competitors, mutualists, decomposers] on the structure and function of plant communities, and effects of global environmental change. Labs will include a field component that explores variation in functional aspects of plants. This course is especially valuable for students interested in plant or wildlife biology and environmental management. Prerequisite(s): 7.50 credits including BIOL*1070. Department(s): Department of Integrative Biology</td>
</tr>
<tr>
<td>BOT*3310</td>
<td>Plant Growth and Development W (3-3) [0.50]</td>
<td></td>
<td>In this course the unique function and structure of plants is explored in relation to their growth, survival and adaptation to the environment. The control of growth and development by environmental and hormonal signals is explained through lectures and &quot;hands-on&quot; laboratories. Prerequisite(s): BIOL<em>1090, (BIOL</em>1070 or BIOL*1080). Department(s): Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>BOT*3410</td>
<td>Plant Anatomy F (3-3) [0.50]</td>
<td></td>
<td>The intricate internal structure of plants is explored in this course. The development, pattern and significance of cells, tissues and organs will be emphasized as well as the histological and microscopic methods used to study them. The lab emphasizes interpretation of plant structure as it relates to function. Prerequisite(s): 2 of BIOL<em>1070, BIOL</em>1080, BIOL*1090. Department(s): Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>BOT*3710</td>
<td>Plant Diversity and Evolution W (3-3) [0.50]</td>
<td></td>
<td>This course integrates fundamental and applied aspects of plant evolution, focusing on the evolutionary history of plants, classification and identification, and hypotheses related to the evolution of plant form and life history. Specific topics include evolutionary processes in plants and evolution of physiological, reproductive, behavioural, and morphological traits. Labs will focus on methods and contemporary tools for phylogenetic reconstruction, comparative analyses, identification, and basic morphology/anatomy. This course is especially valuable for students interested in plant or wildlife and environmental management. Prerequisite(s): 7.50 credits including BIOL*1070. Department(s): Department of Integrative Biology</td>
</tr>
<tr>
<td>DOT*4380</td>
<td>Metabolism in the Whole Life of Plants W (3-0) [0.50]</td>
<td></td>
<td>This course follows the developmental changes that take place in plants, and explores the molecular, biochemical and physiological mechanisms that are responsible for development. Emphasis will be placed on the importance of modern experimental methods and critical evaluation of data. Prerequisite(s): BIOL<em>1090, BIOC</em>2580. Department(s): Department of Molecular and Cellular Biology</td>
</tr>
</tbody>
</table>
### Business

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS*4550</td>
<td>Applied Business Project I S,F,W (3-0) [0.50]</td>
<td>0.50</td>
<td>This is a project-based independent study course on a business issue for third or fourth year students in an agreed program of study with the instructor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Prerequisite(s):</strong> 10.00 credits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Restriction(s):</strong> AGEC<em>4550, FARE</em>4550 Instructor consent required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Department(s):</strong> Department of Management</td>
</tr>
<tr>
<td>BUS*4560</td>
<td>Applied Business Project II S,F,W (3-0) [0.50]</td>
<td>0.50</td>
<td>This course provides an opportunity to conduct a second independent study on a business issue for third or fourth year students in an agreed program of study with the instructor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Prerequisite(s):</strong> BUS*4550</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Restriction(s):</strong> AGEC<em>4560, FARE</em>4560 Instructor consent required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Department(s):</strong> Department of Management</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Offered Format</td>
<td>Prerequisite(s)</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>CHEM*1040</td>
<td>General Chemistry I</td>
<td>F,W</td>
<td>CHEM*1060</td>
</tr>
<tr>
<td>CHEM*1050</td>
<td>General Chemistry II</td>
<td>F,W</td>
<td>CHEM*1060</td>
</tr>
<tr>
<td>CHEM*1060</td>
<td>Introductory Chemistry</td>
<td>F</td>
<td>CHEM*1040</td>
</tr>
<tr>
<td>CHEM*1100</td>
<td>Chemistry Today W</td>
<td>S</td>
<td>CHEM*1040</td>
</tr>
<tr>
<td>CHEM*2060</td>
<td>Structure and Bonding</td>
<td>F</td>
<td>CHEM<em>1050, IPS</em>1500 or (MATH<em>1210, PHYS</em>1010)</td>
</tr>
<tr>
<td>CHEM*2070</td>
<td>Structure and Spectroscopy</td>
<td>S,W</td>
<td>CHEM*1040 Students in the BScA,BHN, BAS, BBRM.EM, BENG, BSAG, BSES and BSC programs cannot take this course for credit.</td>
</tr>
<tr>
<td>CHEM*2400</td>
<td>Analytical Chemistry I</td>
<td>S,F,W</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*2480</td>
<td>Analytical Chemistry I</td>
<td>S,F,W</td>
<td>CHEM<em>1050, CHEM</em>2400 or CHEM*2480</td>
</tr>
<tr>
<td>CHEM*2820</td>
<td>Thermodynamics and Kinetics</td>
<td>F</td>
<td>CHEM<em>1050, (1 of IPS</em>1500, MATH<em>1210, MATH</em>2080)</td>
</tr>
<tr>
<td>CHEM*2880</td>
<td>Physical Chemistry</td>
<td>F</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*3360</td>
<td>Environmental Chemistry and Toxicology</td>
<td>S,W</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*3430</td>
<td>Analytical Chemistry II</td>
<td>S,W</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*3440</td>
<td>Analytical Chemistry III</td>
<td>S,F,W</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*3460</td>
<td>Chemistry of the Elements</td>
<td>F</td>
<td>CHEM*1050</td>
</tr>
<tr>
<td>CHEM*2700</td>
<td>Organic Chemistry</td>
<td>S,W</td>
<td>CHEM*1050</td>
</tr>
</tbody>
</table>
CHEM*2700 Organic Chemistry II S.F (3-3) [0.50]
This course provides continued coverage of fundamental aspects of organic chemistry using an assimilation of carbonyl chemistry, unsaturated systems and carbon-carbon bond forming processes to acquaint students with methods of organic synthesis. Topics also include an introduction to spectroscopic methods for the identification of organic compounds.
Prerequisite(s): CHEM*2700
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Chemistry

CHEM*3760 Organic Chemistry III W (3-3) [0.50]
This course provides an in-depth treatment of various aspects of organic chemistry. This will include such topics as the chemistry of heterocycles, polar rearrangements, organic photochemistry, synthetic planning and a detailed discussion of organic spectroscopy.
Prerequisite(s): CHEM*3750
Department(s): Department of Chemistry

CHEM*3860 Quantum Chemistry F (3-1) [0.50]
This course provides an introduction to quantum chemistry and how it applies to the understanding of the electronic structure of atoms and molecules, as well as the geometric structure of molecules. The theoretical background needed to understand molecular spectroscopy is also provided. An integral part of this course is the use of commercial software for the computation of molecular properties.
Prerequisite(s): CHEM*2070, (MATH*2170 or MATH*2270)
Department(s): Department of Chemistry

CHEM*3870 Molecular Spectroscopy W (3-3) [0.50]
This course covers elementary group theory with applications to molecular spectroscopy and provides a continuation of the topics of rotational, vibrational and electronic spectroscopy and their applications in chemistry from CHEM*2070.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): CHEM*3860, (MATH*2150 or MATH*2160)
Department(s): Department of Chemistry

CHEM*4010 Chemistry and Industry W (3-0) [0.50]
This course examines industrial processes for the production of organic and inorganic chemicals. The environmental impact and the challenges of a large-scale operation will be considered alongside the actual chemical processes involved.
Prerequisite(s): CHEM*2700, (CHEM*3430 or TOX*3300), (1 of IPS*1510, MATH*1210, MATH*2080)
Department(s): Department of Chemistry

CHEM*4400 Advanced Topics in Analytical Chemistry W (3-0) [0.50]
Recent developments in instrumental methods of chemical analysis. A typical selection will include topics from the areas of surface analysis and the applications of lasers in chemical analysis.
Prerequisite(s): CHEM*3430
Department(s): Department of Chemistry

CHEM*4600 Advanced Topics in Inorganic Chemistry F (3-0) [0.50]
This course provides a contemporary treatment of subjects of current interest in modern inorganic chemistry. Possible topics include solid state chemistry, main group chemistry and organometallic chemistry.
Prerequisite(s): CHEM*3650
Department(s): Department of Chemistry

CHEM*4630 Bioinorganic Chemistry W (3-0) [0.50]
This course covers the role and importance of transition metal systems in biological processes.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): BIOC*2580, CHEM*3650
Co-requisite(s): CHEM*3650
Department(s): Department of Chemistry

CHEM*4720 Organic Reactivity W (3-0) [0.50]
This course is an introduction to physical organic chemistry, including discussion of reactive intermediates, substituent effects, medium effects, the mechanisms of organic reactions and the theoretical description of the bonding in organic molecules.
Offering(s): Offered in even-numbered years.
Prerequisite(s): CHEM*3760
Co-requisite(s): CHEM*3760
Department(s): Department of Chemistry

CHEM*4730 Synthetic Organic Chemistry F (3-0) [0.50]
This course provides an introduction to synthetic organic chemistry, including discussion of retrosynthetic analysis, modern synthetic methods, organic reactions, and syntheses of natural products. The integration of these topics for the rational design of synthetic schemes will also be discussed.
Prerequisite(s): CHEM*3750
Department(s): Department of Chemistry

CHEM*4740 Topics in Bio-Organic Chemistry F (3-0) [0.50]
This course covers the principles, methods and techniques of current bio-organic chemistry with emphasis on modern synthetic and analysis methods applied to biological molecules, a molecular based approach to structure recognition, and an introduction to molecular modeling and drug design.
Prerequisite(s): BIOC*2580, CHEM*3750
Department(s): Department of Chemistry

CHEM*4750 Topics in Advanced Physical Chemistry W (3-0) [0.50]
This course will cover selected topics in advanced physical chemistry. Possible topics include statistical thermodynamics, advanced quantum chemistry, spectroscopy, and magnetic resonance.
Offering(s): Offered in even-numbered years.
Prerequisite(s): (CHEM*2820 or PHYS*3240), CHEM*3860
Department(s): Department of Chemistry

CHEM*4900 Chemistry Research Project I S.F,W (0-12) [1.00]
This research project and seminar in chemistry is designed to provide senior undergraduates with an opportunity to conduct research in an area of chemistry. Students must make arrangements with both a faculty supervisor and the course coordinator prior to registration. Students cannot choose a supervisor with whom they already have research experience in another capacity (e.g. a summer research position). The project supervisor must be a faculty member of the Chemistry Department. Students should note that most projects are of two semesters' duration, and should plan their studies on the expectation that they will also register in CHEM*4910 in a subsequent semester.
Prerequisite(s): 5.00 credits in chemistry including (1.50 credits from CHEM*3430, CHEM*3640, CHEM*3650, CHEM*3750, CHEM*3760, CHEM*3860)
Restriction(s): Instructor consent required.
Department(s): Department of Chemistry

CHEM*4910 Chemistry Research Project II S,F,W (0-12) [1.00]
This is a research project and seminar in chemistry. Students must make arrangements with both a faculty supervisor and the course coordinator prior to registration.
Prerequisite(s): CHEM*4900
Restriction(s): Instructor consent required.
Department(s): Department of Chemistry
### CHIN*1200 Introductory Chinese I F (3-0) [0.50]

This introductory course in Mandarin Chinese provides the fundamentals of grammar, structure, and idiom, and due importance to the spoken language. This course is for students with no previous knowledge of the language.

**Restriction(s):** Students with native or near-native ability in Chinese will not be admitted to this course.

**Department(s):** School of Languages and Literatures

### CHIN*1210 Introductory Chinese II W (3-0) [0.50]

This course, a continuation of CHIN*1200, emphasizes the application of basic grammatical structure in oral work and the comprehension of elementary reading texts. This course is intended for students who have only a basic knowledge of Mandarin Chinese.

**Prerequisite(s):** CHIN*1200

**Department(s):** School of Languages and Literatures

### CHIN*1280 Conversational Chinese I F (3-0) [0.50]

The emphasis of this course is intensive practice of conversation and vocabulary acquisition in Mandarin Chinese.

**Restriction(s):** This course is restricted to students who are not fluent in Mandarin Chinese.

**Department(s):** School of Languages and Literatures

### CHIN*1290 Conversational Chinese II W (3-0) [0.50]

This is a continuation of CHIN*1280. Additional emphasis will be given to the study of grammatical points in order to enhance listening and speaking skills.

**Prerequisite(s):** CHIN*1280

**Restriction(s):** This course is restricted to students who are not fluent in Mandarin Chinese.

**Department(s):** School of Languages and Literatures

### CHIN*2010 Chinese Language and Culture F (3-5) [1.00]

This language course provides the application of basic grammatical structures in relation to conversational Mandarin (Chinese). The course may include the comprehension of elementary reading texts. The course focuses on Chinese, as a language, and its relation to understanding the culture of China. This course is offered as part of the Shanghai Semester.

**Prerequisite(s):** CHIN*1200 or equivalent

**Restriction(s):** Admission to the Shanghai semester. Instructor consent required.

**Department(s):** School of Languages and Literatures

### CHIN*2200 Intermediate Chinese I F (3-0) [0.50]

This course supports the further development of the four basic language skills (speaking, writing, reading, and listening) acquired in previous Chinese Language courses and includes a survey of grammar, complex sentences and logical stress.

**Prerequisite(s):** CHIN*1210

**Restriction(s):** Instructor consent required.

**Department(s):** School of Languages and Literatures

### CHIN*2210 Intermediate Chinese II W (3-0) [0.50]

This is a continuation of Intermediate Chinese I. Additional emphasis will be given to the study of Chinese characters and grammar.

**Prerequisite(s):** CHIN*2200

**Restriction(s):** Instructor consent required.

**Department(s):** School of Languages and Literatures
### Classical Studies

**School of Languages and Literatures**

Unless otherwise noted, these courses do not require a knowledge of the Greek or Latin languages.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Offering(s)</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS*1000</td>
<td>Introduction to Classical Culture</td>
<td>Winter semester offering in odd-numbered years.</td>
<td></td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*2000</td>
<td>Classical Mythology</td>
<td>Winter semester offering in odd-numbered years.</td>
<td></td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*2150</td>
<td>Western Art: Greece F</td>
<td>Offered in odd-numbered years.</td>
<td>CLAS<em>1000 or CLAS</em>2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*2350</td>
<td>The Classical Tradition</td>
<td>Offered in odd-numbered years.</td>
<td>CLAS<em>1000 or CLAS</em>2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3000</td>
<td>The Rise and Fall of Athens F</td>
<td>Offered in odd-numbered years.</td>
<td>1 of CLAS<em>1000, CLAS</em>2000, HIST*2850</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3010</td>
<td>The Roman Revolution</td>
<td>Offered in odd-numbered years.</td>
<td>LAT*2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3020</td>
<td>Greek History</td>
<td>Offered in odd-numbered years.</td>
<td>LAT*2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3030</td>
<td>Epic Heroes and Poems</td>
<td>Offered in odd-numbered years.</td>
<td>1 of CLAS<em>1000, CLAS</em>2000, HIST*2850</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3040</td>
<td>Greek Tragedy and Comedy</td>
<td>Winter semester offering in odd-numbered years.</td>
<td></td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3050</td>
<td>The Rise and Fall of Athens (in Greek)</td>
<td>Offered in odd-numbered years.</td>
<td>CLAS<em>1000 or CLAS</em>2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3060</td>
<td>The Roman Revolution (in Latin)</td>
<td>Offered in odd-numbered years.</td>
<td>LAT*2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3070</td>
<td>History of the Hellenistic World (in Greek)</td>
<td>Offered in odd-numbered years.</td>
<td>GREK*2020</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3080</td>
<td>Epic Heroes and Poems (in Greek)</td>
<td>Offered in odd-numbered years.</td>
<td>GREK*2020</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3090</td>
<td>Greek Tragedy and Comedy (in Greek)</td>
<td>Offered in odd-numbered years.</td>
<td>GREK*2020</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3100</td>
<td>Religion in Greece and Rome F</td>
<td>Offered in odd-numbered years.</td>
<td>CLAS<em>1000 or CLAS</em>2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3110</td>
<td>Religion in Greece and Rome</td>
<td>Offered in odd-numbered years.</td>
<td>LAT*2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3120</td>
<td>Religion in Greece and Rome (in Latin)</td>
<td>Offered in odd-numbered years.</td>
<td>LAT*2000</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3150</td>
<td>Space: Roman Art and Urbanism W</td>
<td>Offered in odd-numbered years.</td>
<td>ARTH*3150</td>
<td>Department(s): School of Languages and Literatures</td>
</tr>
</tbody>
</table>

---

**II. Course Descriptions, Classical Studies**

**CLAS*1000 Introduction to Classical Culture**

This course provides a wide-ranging look at essential features of Greek and of Roman culture and society. Considerable emphasis will be given to the classical views of the human condition.

**CLAS*2000 Classical Mythology**

An examination of the nature and function of myth in Classical Antiquity. The course shows how the narrative and symbolic structure of myths orders individual and communal experience. The myths that have influenced Western civilization receive special emphasis.

**CLAS*2150 Western Art: Greece F**

A survey of Ancient Greek Art and Archaeology, with stress on form and function plus stylistic trends and aesthetic values. The course will illuminate the cultural, social, and political life in Ancient Greece. (Also listed as ARTH*2150).

**CLAS*2350 The Classical Tradition**

This course examines the transmission of Graeco-Roman culture in circumstances radically different from those in which it originated. It highlights the aspects of classical culture most influential in forming the Western tradition.

**CLAS*3000 The Rise and Fall of Athens F**

Greek history in the 5th century; the development of Athenian democracy; the Peloponnesian War and the decline of Athenian dominance. Special attention is paid to Greek history in the context of cultural, social and political life. (Also listed as ARTH*2150).

**CLAS*3010 The Roman Revolution**

Introduction to Roman art and urbanism from the Early Republic to the end of the imperial period. The course will survey the developments of Roman art with an emphasis on architecture, sculpture and painting. It will illuminate the development of the urban space in the context of cultural, social and political life. (Also listed as ARTH*3150).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS*3300</td>
<td>Directed Reading in Greek or Latin U (3-0) [0.50]</td>
<td></td>
<td>This course is designed for students of Greek or Latin who are seeking an enriched learning opportunity, through directed reading and/or research in the original language (Greek or Latin). Consult the Classical Studies faculty advisor for information about this opportunity.</td>
<td>LAT<em>2000, (1 of CLAS</em>2350, CLAS<em>3010, CLAS</em>3100, CLAS<em>4000), or [GREK</em>2020, (1 of CLAS<em>3000, CLAS</em>3020, CLAS<em>3030, CLAS</em>3040)]</td>
<td>Instructor consent required.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*3700</td>
<td>Experiential Learning and Language S,F,W (0-0) [0.50]</td>
<td></td>
<td>This course provides an opportunity for independent study based on an experiential project in Classical Studies. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.</td>
<td>10.00 credits including 1.50 credits in Classics.</td>
<td>A minimum cumulative average of 70% in all Classics course attempts. Instructor consent required.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4000</td>
<td>Novel and Romance in Antiquity F (3-0) [0.50]</td>
<td></td>
<td>The historical and formal roots of fiction in the classical prose romances. Special attention is paid to the influence of myth, religion, historiography and ethical biography. Among texts studied are Daphnis and Chloe, Satyricon, and Aithiopika.</td>
<td>CLAS<em>3030 or CLAS</em>3040</td>
<td>Offered in odd-numbered years.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4010</td>
<td>Novel and Romance in Antiquity (in Latin) F (6-0) [1.00]</td>
<td></td>
<td>This course augments CLAS*4000 for students of Latin through the reading and study in Latin of an extant novel.</td>
<td>LAT*2000</td>
<td>Offered in odd-numbered years.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4150</td>
<td>Research Paper in Classics F,W (3-0) [0.50]</td>
<td></td>
<td>This course is intended to complement courses in specified studies in classics. It engages the student in research and in critical writing, and permits the examination, in depth, of a topic of importance to the discipline and of interest to the student.</td>
<td>1.50 credits in Classical Studies courses at the 3000 level</td>
<td>Offered in odd-numbered years.</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>CLAS*4400</td>
<td>Seminar in Classics W (3-0) [0.50]</td>
<td></td>
<td>A seminar course complementing courses of specific study in classics. It seeks to define the nature of the discipline, its values and its procedures. Attention will be paid to recent methodological and ideological trends in the discipline.</td>
<td>1.50 credits in Classical Studies at the 3000 level</td>
<td>Offered in odd-numbered years.</td>
<td>School of Languages and Literatures</td>
</tr>
</tbody>
</table>
XII. Course Descriptions, Computing and Information Science

CIS*1000 Introduction to Computer Applications S,F,W (3-2) [0.50]

This course provides a survey of computer systems and software, including an introduction to computer programming, data organization and the social impact of computing. The course emphasizes application packages for personal and business use.

Offering(s): Offered through Distance Education format only.
Restriction(s): Restricted to students registered in B.A.Sc. Program (Applied Human Nutrition major), B.Comp. degree or a CIS minor.
Department(s): School of Computer Science

CIS*1200 Introduction to Computing F,W (3-2) [0.50]

This course covers an introduction to computer hardware and software, data organization, problem-solving and programming. The course includes exposure to application packages for personal and business use and is intended for students who wish a balance between programming and the use of software packages.

Offering(s): Offered through Distance Education format only.
Restriction(s): Restricted to students registered in a B.Comp. degree or a CIS minor.
Department(s): School of Computer Science

CIS*1250 Software Design I F (3-2) [0.50]

This is an introductory course which involves a general overview of design and problem solving as it is practiced in different disciplines. The course will include an examination of the qualities of software as the end product of the design process. It will include a study of the pervasiveness of software, and the platform specific considerations. The course has an applied focus and will involve software design and development experiences in teams, a literacy component, and the use of software development tools.

Restriction(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits and to students in BCOMP:SENG and BCOMP:SENG:C
Department(s): School of Computer Science

CIS*1500 Introduction to Programming F,W (3-2) [0.50]

Introductory problem-solving and programming and data organization techniques required for applications using a general purpose programming language. Topics include control structures, data representation and manipulation, program logic, development and testing. For students who require a good understanding of programming or are planning on taking additional specialist Computing and Information Science courses. This is the entry point to all CIS programs.

Offering(s): Also offered through Distance Education format.
Restriction(s): Restricted to students having a minimum of 12 credits in the School of Computer Science.
Department(s): School of Computer Science

CIS*1910 Discrete Structures in Computing I W (3-2) [0.50]

This course is an introduction to discrete structures and formal methodologies used in computer science, including Boolean, algebra, propositional logic, predicate logic, proof techniques, set theory, equivalence relations, order relations, and functions.

Restriction(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2030 Structure and Application of Microcomputers F (3-3) [0.50]

This course examines the components of a computer system, including memories, CPU, buses, and input/output subsystems and interface hardware. Programming of these systems is studied, including instruction sets, addressing modes, assembly/machine language programming, development of algorithms for data acquisition, display, and process control.

Restriction(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2050 Computers and Society S (3-0) [0.50]

Students in this course will investigate and study the social impacts of computing technology. The course will provide a brief introduction to ethics and the history of computing and the Internet. Additional content will focus on areas in which computers and information technology are having an impact on individuals and society including privacy, safety, freedom of speech, intellectual property, work, distribution of wealth, and the environment. This course is intended for students in any discipline.

Offering(s): Offered through Distance Education format only.
Restriction(s): Restricted to students in the Software Engineering Major.
Department(s): School of Computer Science

CIS*2130 Discrete Mathematics for Computer Science S (3-0) [0.50]

This course provides a foundation in finite mathematics which is required for further computer science courses. Topics which will be studied include abstract representation of structures and algorithms, graph theory, logic, and set theory.

Restriction(s): Entry into the Pathways program for the Computer Science major in the BCOMP program.
Department(s): School of Computer Science

CIS*2170 User Interface Design W (3-2) [0.75]

This course is a practical introduction to the area of user interface construction. Topics include user interface components and their application, best practices for user interface design, approaches to prototyping, and techniques for assessing interface suitability.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2250 Software Design II W (3-2) [0.50]

This course focuses on the process of software design. Best practices for code development and review will be examined. The software development process and tools to support this will be studied along with methods for project management. The course has an applied focus and will involve software design and development experiences in teams, a literacy component, and the use of software development tools.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2430 Object Oriented Programming F (3-2) [0.50]

This course introduces the Object Oriented (OO) approach to program design. Topics will include the creation and use of objects from class libraries, user defined objects, inheritance, modularity, generic code, components, collections and containers, and an introduction to OO design methodologies.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2460 Modelling of Computer Systems F (3-2) [0.50]

This course examines discrete simulation based on event queues and random number generation. Methods for generating input data, measuring and evaluating results using standard statistical tests are studied. Topics covered will include model validation, and algebraic, probabilistic and simple queueing models of software and hardware operation.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2500 Intermediate Programming W (3-2) [0.50]

How to interpret a program specification and implement it as reliable code. Experience with pointers, complex data types, and important algorithms. Intermediate tools and techniques in problem-solving, programming and program testing.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2520 Data Structures S,F (3-2) [0.50]

This course is a study of basic data structures, such as lists, stacks, queues, trees, and tables. Topics which will be examined include abstract data types, sequential and linked representations, and an introduction to algorithm analysis; various traversal, search, insertion, removal, and sorting algorithms.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Equated(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2570 Software Systems Development and Integration W (3-2) [0.50]

Techniques and tools used in the development of large software systems. Methods for organizing and constructing modular systems, manipulating files, an introduction to interface design, and use of databases. Software tools for managing projects, database connectivity, configuration management, and system application programmer interfaces.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science

CIS*2910 Discrete Structures in Computing II F (3-2) [0.50]

This course is a further introduction to discrete structures and formal methodologies used in computer science, including sequences, summations, recursion, combinators, discrete probability, and graph theory.

Prerequisite(s): Restricted to students in BCOMP:CS and BCOMP:CS:C with 2.50 or fewer credits.
Department(s): School of Computer Science
CIS*3000 Social Implications of Computing 
F (4-0) [0.50] 
This course focuses on social, ethical, legal and managerial issues in the application of 
computer science to the information technology industry. Through seminars and case 
-studies, human issues confronting Computer Science professionals will be addressed.
Prerequisite(s): 2.00 credits in CIS courses
Restriction(s): CIS*2050 Cannot be taken for credit by students in B.Comp. Software 
Engineering.
Department(s): School of Computer Science

CIS*3090 Parallel Programming 
F (3-1) [0.50] 
This course examines the current techniques for design and development of parallel 
programs targeted for platforms ranging from multicore computers to high-performance 
clusters, with and without shared memory. It includes theoretical models for, and hardware 
effects on, parallel computation, the definitions of speedup, scalability, and data- versus 
task-parallel approaches. The course will also examine strategies for achieving speedup 
based on controlling granularity, resource contention, idle time, threading overhead, work 
allocation, and data localization.
Prerequisite(s): (CIS*2030 or ENGG*3640), CIS*3110
Department(s): School of Computer Science

CIS*3100 Operating Systems 
F (3-1) [0.50] 
Operating Systems in theory and practice. Components in a system: scheduling and 
resource allocation; process management, multi-programming, multi-tasking; I/O control 
and file systems; mechanisms for client-server computing. Examples from contemporary 
operating systems.
Prerequisite(s): (CIS*2500 or CIS*2650), Recommended (CIS*2030 or ENGG*2410).
Department(s): School of Computer Science

CIS*3120 Digital Systems 
F (3-2) [0.50] 
This course examines Boolean algebra, minimization of Boolean expressions, design of 
combinational and sequential logic circuits, memory design, control, ALU, bus design, 
microprogramming and CPU design.
Prerequisite(s): CIS*2030
Department(s): School of Computer Science

CIS*3150 Theory of Computation 
F (3-0) [0.50] 
This course explores the theory of computation including automata theory, Turing 
machines and their variants, formal languages, parsing, the Halting problem, 
undecidability, and NP-completeness.
Prerequisite(s): CIS*2450 or CIS*2750), CIS*3490
Restriction(s): CIS*3620, CIS*4600, CIS*4620
Department(s): School of Computer Science

CIS*3190 Software for 
Legacy Systems W (0-0) [0.50] 
This course is an introduction to legacy software systems used in business, manufacturing, 
and engineering. Topics include COBOL programming, mainframe systems, and 
integration of legacy systems with contemporary computing systems.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): CIS*2500 or work experience in a related field.
Department(s): School of Computer Science

CIS*3210 Computer Networks 
F (3-1) [0.50] 
This course covers the high-level (protocol) oriented aspects of computer networks, 
specifically: application, session, transport and network layers. It includes the internet, 
socket-level programming, multimedia and quality of service issues. The hardware aspects 
(switches, LANs, modems, transmission paths) are covered at only a functional level.
Prerequisite(s): CIS*3110
Restriction(s): CIS*4200
Department(s): School of Computer Science

CIS*3250 Software Design 
III F (3-3) [0.50] 
This course will examine the historical development of design methodologies and working 
with legacy systems. It will include an examination of programming paradigms and trends 
in software design from the past and present. The course has an applied focus and will 
involves software design and development experiences in teams, a literacy component, 
and the use of software development tools.
Offering(s): First offering - Fall 2011
Prerequisite(s): CIS*2250, CIS*2500
Department(s): School of Computer Science

CIS*3260 Software Design IV 
F (3-3) [0.50] 
This course is a study of software architectures and system design methodologies. This 
will include advanced techniques for project management and experience evaluating 
software tools. The course has an applied focus and will involve software design and 
development experiences in teams, a literacy component, and the use of software 
development tools.
Offering(s): First offering - Fall 2012
Prerequisite(s): CIS*2430, CIS*2750, CIS*3250
Department(s): School of Computer Science

CIS*3490 The Analysis and 
Design of Computer Algorithms 
W (3-2) [0.50] 
The design and analysis of efficient computer algorithms are studied. Topics which will 
be studied include: standard methodologies, asymptotic behaviour, optimality, lower 
hounds, implementation considerations, graph algorithms, matrix computations (e.g. 
Strassen's method), NP-completeness.
Prerequisite(s): (CIS*1900 or CIS*2910), (CIS*2420 or CIS*2520)
Department(s): School of Computer Science

CIS*3550 Data Base Systems 
and Concepts F (3-1) [0.50] 
This course is a study of data organization and data management principles with the 
perspective of analyzing applications suitable for implementation using a DBMS. This 
will include an analysis of several data base models, query specification methods, and 
query processing techniques. Overview of several related issues including concurrence 
control, security, integrity and recovery. Students will demonstrate concepts through 
project assignments.
Prerequisite(s): CIS*2520
Department(s): School of Computer Science

CIS*3700 Introduction to 
Intelligent Systems W (3-1) [0.50] 
This course covers the core topics of Artificial Intelligence, namely: agents and 
environment, search, knowledge representation, reasoning, and learning. The last three 
topics are covered using logic as the common formalism for coherence. The course 
introduces a broad range of basic concepts, terminology, and applications, in addition to 
providing some specific, widely applicable methodologies.
Prerequisite(s): (CIS*3750 or CIS*3760), (CIS*2460 or STAT*2040)
Restriction(s): CIS*4750 CIS*4760
Department(s): School of Computer Science

CIS*3735 System Analysis 
and Design in Applications 
F (3-2) [0.75] 
An introduction to the issues and techniques encountered in the design and construction 
of software systems. The theory and models of software evolution. Topics include 
requirements and specifications, prototyping, design principles, object-oriented analysis 
and design, standards, integration, risk analysis, testing and debugging.
Prerequisite(s): CIS*2750
Restriction(s): CIS*3430
Department(s): School of Computer Science

CIS*3760 Software Engineering 
W (3-2) [0.75] 
This course is an examination of the software engineering process, the production of 
reliable systems and techniques for the design and development of complex software. 
Topics include object-oriented analysis, design and modeling, software architectures, 
software reviews, software quality, software engineering, ethics, maintenance and formal 
specifications.
Prerequisite(s): CIS*2750, (CIS*3110 recommended)
Restriction(s): CIS*3200
Department(s): School of Computer Science

CIS*4050 Digital Systems 
II F (3-1) [0.50] 
This course examines central processor architectures, control and microprogramming, 
memory systems, special architectures, underlying support for special architectures, 
architectures suitable for very large scale integration.
Offering(s): Offered in even-numbered years.
Prerequisite(s): CIS*3110, CIS*3120
Restriction(s): CIS*3110
Department(s): School of Computer Science

CIS*4110 Computer Security 
W (3-1) [0.50] 
This course is a practical survey of the principles and practice of information security. 
Topics include but are not limited to encryption (symmetric and public key cryptography, 
key exchange, authentication), security issues and threats (eavesdropping, 
impersonation, denial of service, viruses, worms, access violations, PKI), system and 
network security, intrusion detection, access control (DAC, MAC, RBAC), database 
security, the common criteria, and threat risk management.
Prerequisite(s): CIS*3110
Department(s): School of Computer Science
CIS*4150 Software Reliability and Testing F (2-2) [0.50]
This course serves as an introduction to systematic methods of testing and verification, covering a range of static and dynamic techniques and their use within the software development process. Concepts such as defining necessary reliability, developing operational profiles, techniques to improve and predict software reliability, preparing and executing tests, black box testing, white box testing, unit testing, system testing, and integration testing will be explained.
Prerequisite(s): CIS*3750 or CIS*3760
Department(s): School of Computer Science

CIS*4250 Software Design V F (0-6) [0.50]
This is a capstone course which applies the knowledge gained from the previous Software Design courses to a large team project. The course has an applied focus and will involve software design and development experiences in teams, a literacy component, and the use of software development tools.
Offering(s): First offering - Fall 2013
Prerequisite(s): CIS*2750, CIS*3260, CIS*3750
Department(s): School of Computer Science

CIS*4300 Human Computer Interaction F (2-2) [0.50]
This course examines the methods for user interface software design, including interface representations and testing. Topics which will be studied include the evaluation and design of sample application systems, impacts of computer-based information systems on individuals and organizations, implementation and testing tools, and planning of learning stages and design of assistance subsystems.
Prerequisite(s): CIS*3110, (CIS*3750 or CIS*3760)
Department(s): School of Computer Science

CIS*4410 Trends in Distributed Systems W (3-1) [0.50]
This course examines the technical issues surrounding modern and future distributed commercial enterprises. Special attention is given to new communication modes, high volume, data-intensive systems, distributed transactions and security mechanisms.
Prerequisite(s): CIS*2120, (CIS*3750 or CIS*3760)
Department(s): School of Computer Science

CIS*4430 Information Organization and Retrieval W (3-1) [0.50]
This course studies advanced techniques for information management. This includes the analysis of advanced indexing structures, information retrieval, feedback strategies, text searching, automatic indexing, database query optimization and system support, web based retrieval.
Offering(s): Offered in even-numbered years. And may be offered in odd-numbered years.
Prerequisite(s): CIS*3110, CIS*3530, (CIS*3750 or CIS*3760)
Department(s): School of Computer Science

CIS*4450 Special Topics in Information Science U (3-1) [0.50]
A variety of advanced topics mainly from areas within general information processing. Subject areas discussed in any particular semester will depend on the interests of the students and the instructor. Students should check with the School of Computer Science to determine what topic will be offered during specific semesters and which prerequisites, if any, are appropriate.
Restriction(s): Instructor consent required.
Department(s): School of Computer Science

CIS*4500 Special Topics in Computing Science U (3-1) [0.50]
A variety of advanced topics within Computing Science. Subject areas discussed in any particular semester will depend upon the interests of both the students and the instructor. Students should check with the School of Computer Science to determine what topic will be offered during specific semesters and which prerequisites, if any, are appropriate.
Restriction(s): Instructor consent required.
Department(s): School of Computer Science

CIS*4650 Compilers W (3-1) [0.50]
This course is a detailed study of the compilation process. Topics include interpreters, overall design implementation of a compiler, techniques for parsing, building and manipulating intermediate representations of a program, implementation of important features, code generation and optimization.
Prerequisite(s): CIS*2030, CIS*3110, CIS*3150
Restriction(s): CIS*3650
Department(s): School of Computer Science

CIS*4720 Image Processing and Vision W (3-1) [0.50]
This course is an introduction to the process of image processing. Emphasis is placed on topics such as image enhancement, segmentation, morphological analysis, texture analysis, visualization and image transformations. Applications of image processing in medicine, forensics, food and security are surveyed.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (CIS*2450 or CIS*2750), CIS*3110, (CIS*2460 or STAT*2040), (CIS*3700 recommended).
Restriction(s): CIS*4760
Department(s): School of Computer Science

CIS*4750 Artificial Intelligence F (2-2) [0.50]
A variety of advanced topics mainly from areas within general information processing. This course examines the methods for user interface software design, including interface representations and testing. Topics which will be studied include the evaluation and design of sample application systems, impacts of computer-based information systems on individuals and organizations, implementation and testing tools, and planning of learning stages and design of assistance subsystems.
Prerequisite(s): (CIS*3750 or CIS*3760)
Department(s): School of Computer Science

CIS*4780 Computational Intelligence F (3-1) [0.50]
This course introduces concepts of soft computing: modelling uncertainty, granular computing, neurocomputing, evolutionary computing, probabilistic computing and soft computing for software engineering.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (CIS*3750 or CIS*3760) CIS*3490, (CIS*2460 or STAT*2040), (CIS*3700 recommended).
Restriction(s): CIS*4760
Department(s): School of Computer Science

CIS*4820 Game Programming W (3-1) [0.50]
This course will focus on the components found in modern 3-D game engines. It will emphasize the algorithms and data structures required to create real-time computer graphics, sound and network communications.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): CIS*3110, (CIS*3750 or CIS*3760)
Department(s): School of Computer Science

CIS*4900 Computer Science Project S,F,W (0-6) [0.50]
Planning, developing and writing a research proposal under individual faculty supervision. The course, in continuation with CIS*4910 provides senior undergraduates an opportunity to pursue an independent course of study. The topic selected will be determined by agreement between the student and the faculty member with expertise in the area.
Prerequisite(s): Instructor consent required.
Offering(s): Instructor consent required.
Restriction(s): 7.00 credits in CIS
Department(s): School of Computer Science

CIS*4910 Computer Science Thesis S,F,W (0-6) [0.50]
This course is a continuation of CIS*4900. The student will conduct and write an undergraduate thesis under the individual supervision of a faculty member. In addition the student is required to present his/her work in a seminar and also participate in the critical analysis and review of the work of other students taking this course.
Prerequisite(s): CIS*4900
Restriction(s): Instructor consent required.
Department(s): School of Computer Science
**Co-operative Education**

*Co-operative Education & Career Services*

**COOP*XXXX courses are limited to students registered in a co-operative education program.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOP*1000</td>
<td>Co-op Work Term I F,W,S</td>
<td>3-0</td>
<td>This is a semester long experience in a paid work setting. Co-op work semesters differ depending on the program and major. Location of the semester is varied. Refer to program of study for the semester in which this is scheduled. Students must obtain a passing grade in order to continue in the Co-op Program.</td>
<td>COOP*1100</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
<tr>
<td>COOP*1100</td>
<td>Introduction to Co-operative Education</td>
<td>1-0</td>
<td>This course will introduce students to the theory and practice of co-operative education at the University of Guelph. Students will learn to take full advantage of the co-op option. They will acquire practice in the skills required to succeed in the competitive process of securing suitable work terms. Specifically, the course will cover: characteristics and expectations of the &quot;new&quot; world of work, interview skills, resume and cover letter writing, as well as general skills required to be successful in the co-op program. Students also obtain practice in the co-op employment process.</td>
<td>2.00 credits</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
<tr>
<td>COOP*2000</td>
<td>Co-op Work Term II F,W,S</td>
<td>3-0</td>
<td>This is a semester long experience in a paid work setting. Co-op work semesters differ depending on the program and major. Location of the semester is varied. Refer to program of study for the semester in which this is scheduled. Students must obtain a passing grade in order to continue in the Co-op Program.</td>
<td>Completion of previous co-op work requirements in COOP*1000</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
<tr>
<td>COOP*3000</td>
<td>Co-op Work Term III F,W,S</td>
<td>3-0</td>
<td>This is a semester long experience in a paid work setting. Co-op work semesters differ depending on the program and major. Location of the semester is varied. Refer to program of study for the semester in which this is scheduled. Students must obtain a passing grade in order to continue in the Co-op Program.</td>
<td>Completion of previous co-op work requirements in COOP*2000</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
<tr>
<td>COOP*4000</td>
<td>Co-op Work Term IV F,W,S</td>
<td>3-0</td>
<td>This is a semester long experience in a paid work setting. Co-op work semesters differ depending on the program and major. Location of the semester is varied. Refer to program of study for the semester in which this is scheduled. Students must obtain a passing grade in order to continue in the Co-op Program.</td>
<td>Completion of previous co-op work requirements in COOP*3000</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
<tr>
<td>COOP*5000</td>
<td>Co-op Work Term V F,W,S</td>
<td>3-0</td>
<td>This is a semester long experience in a paid work setting. Co-op work semesters differ depending on the program and the major. Location of the semester is varied. Refer to program of study for the semester in which this is scheduled. Students must obtain a passing grade in order to continue in the Co-op program.</td>
<td>Completion of previous co-op work requirements in COOP*4000</td>
<td>Co-operative Education &amp; Career Services</td>
</tr>
</tbody>
</table>
### CROP*3300 Grain Crops W (3-0) [0.50]
Management strategies and world production of the major temperate grain crops are studied relative to their botanical and physiological characteristics and to available environmental resources. The utilization of grain crops for human food, livestock feed, and various industrial products are examined.

**Prerequisite(s):** AGR*2050 or AGR*2470  
**Department(s):** Department of Plant Agriculture

### CROP*3310 Protein and Oilseed Crops F (3-0) [0.50]
Management strategies and world production of the major temperate protein and oilseed crops are studied relative to their botanical and physiological characteristics and to available environmental resources. The utilization of protein and oilseed crops for human food, livestock feed, and various industrial products are examined.

**Prerequisite(s):** AGR*2050 or AGR*2470  
**Department(s):** Department of Plant Agriculture

### CROP*3340 Managed Grasslands W (3-2) [0.50]
Managed forage grasses and legumes provide grazing, conserved feed, and a wider range of services to the environment and society at large are covered in this course. Agro-ecological, genetic, and managerial considerations will be integrated toward addressing questions of ruminant production and environmental management. Species will be distinguished morphologically and physiologically, focusing on adaptation to climatic, edaphic, and managerial constraints. Topics will include: physiological attributes of forage species, sward lifespan, establishment and maintenance practices, forage quality indices, and harvest management.

**Offering(s):** Offered in even-numbered years.  
**Prerequisite(s):** 1 of AGR*2050, AGR*2470, CROP*2110  
**Department(s):** Department of Plant Agriculture

### CROP*4220 Cropping Systems W (3-2) [0.50]
Design of cropping systems for specific livestock, poultry, and cash crops; integration of all factors affecting crop yields, quality, and economy of production such as choice and interchangeability of crops, crop sequence, tillage, pest control, seasonal work programming, harvesting, drying, and storage.

**Prerequisite(s):** (1 of CROP*3300, CROP*3310, CROP*3340), (1 of AGR*2320, ENVS*3080, ENVS*4090, SOIL*3080, SOIL*4090)  
**Department(s):** Department of Plant Agriculture

### CROP*4240 Weed Science F (3-3) [0.50]
Weeds will be studied in relation to agricultural practices. Principles of chemical, mechanical, and biological control will be outlined. Laboratories will include weed identification, weed control methods, and demonstrations of the effects of various herbicides.

**Prerequisite(s):** AGR*2470  
**Department(s):** Department of Plant Agriculture

### CROP*4260 Crop Science Field Trip F (0-4) [0.50]
This field study course is designed to increase the student's knowledge of agricultural production, agricultural policy, and agri-business. Students will tour the midwestern United States just prior to the start of the fall semester, visiting cash crop, horticultural, and livestock farms, and supporting industries such as processing, manufacturing, elevators, and stockyards. A student fee will be assessed to cover transportation and lodging.

**Prerequisite(s):** 12.50 credits including AGR*2470  
**Restriction(s):** A cumulative average of 65%. Instructor consent required.  
**Department(s):** Department of Plant Agriculture
### Economics

**Department of Economics and Finance**

For courses without semester designations, please check with the department. Advance schedules are available in the department.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
<th>Offering(s)</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON*1050</td>
<td>Introductory Microeconomics</td>
<td>An introduction to the Canadian economy: price determination, market structure and resource allocation; the behaviour of consumers and firms; market intervention by government. Some of the economic issues addressed may include agricultural price supports, rent control, the NAFTA, environmental regulation, price discrimination, pay equity, and taxation.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON*1200</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*1100</td>
<td>Intermediate Macroeconomics</td>
<td>This course looks at the Canadian Economy in terms of aggregate performance and policy; analysis of the determinants of national income, employment and the price level, and the role of government monetary and fiscal policies in improving the rate of economic growth.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON<em>1050, ECON</em>1100</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2100</td>
<td>Economic Growth and Environmental Quality</td>
<td>This course examines the implications of economic growth on the quality of the environment, employing the basic principles of economic analysis.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON<em>1050, ECON</em>1100</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2200</td>
<td>Industrial Relations</td>
<td>This is a survey course of the Canadian industrial relations system. Among the topics covered are: the growth and objectives of unions, the legal framework of collective bargaining, the effects of unions on industry and the economy, industrial conflict and public policies.</td>
<td>ECON*1050</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*2310</td>
<td>Intermediate Microeconomics</td>
<td>This course is an analysis of the behaviour of households and firms under alternative assumptions and market conditions.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON<em>1100, (1 of IPS</em>1500, MATH<em>1030, MATH</em>1080, MATH*1200)</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2410</td>
<td>Intermediate Macroeconomics</td>
<td>This course is an analysis of open as well as closed economy models of aggregate spending, output, employment, prices and interest rates under alternative assumptions about the nature of labour, product and financial markets. The analysis of theories of consumption, investment and money demand.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON<em>1100, (1 of IPS</em>1500, MATH<em>1030, MATH</em>1080, MATH*1200)</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2420</td>
<td>Canadian Economic History</td>
<td>This course surveys the development of the Canadian economy from the aboriginal economy to the early fur and fish trades, agricultural settlement, industrialization, the Great Depression, growth of the public sector and fast economic growth after World War Two. Particular attention is paid to international economic relations and to regional differences within Canada.</td>
<td>ECON<em>1050, (ECON</em>1100 or HIST*2450)</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*2560</td>
<td>Theory of Finance</td>
<td>This course looks at capital budgeting and long-term finance and investment decisions by firms and individuals. It introduces capital asset pricing under uncertainty and the concept of efficient markets. A major emphasis is on corporate finance.</td>
<td>Also offered through Distance Education format.</td>
<td>ECON<em>1050, (1 of IPS</em>1500, MATH<em>1030, MATH</em>1080, MATH<em>1200), (1 of ECON</em>2740, PSYC<em>1010, PSYC</em>2010, SOAN<em>2120, STAT</em>2040, STAT<em>2060, STAT</em>2080, STAT*2120)</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*2650</td>
<td>Introductory Development Economics</td>
<td>This course introduces students to the economic experience of developing countries, the ways in which economists try to understand it, and the implications for policy. The basic tools of economic analysis as taught in the introductory courses are used to analyse topics that may include theories of growth, trade, education, foreign investment, exchange rates, labour markets, the role of government, environmental sustainability and strategies related to agriculture, population, industry and investment.</td>
<td>ECON<em>3460, ECON</em>3560</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*2720</td>
<td>Business History</td>
<td>This course surveys the evolution of economic activity and organization from the industrial revolution to the present. Particular attention is given to the changing relationship between technology and business organization, the shift from proprietorship to corporation and the rise of multinational enterprise. Other topics may include the relationship between business and government, the role of the entrepreneur in the process of technical change and the evolution of work patterns and standards of living.</td>
<td>ECON<em>1050, (ECON</em>1100 or any 1.5 credits in history)</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*2740</td>
<td>Economic Statistics</td>
<td>This course is designed to prepare students conceptually and mathematically for ECON<em>2560, Theory of Finance and ECON</em>3740, Introduction to Econometrics. Topics include the summation operator, descriptive statistics, frequency distributions, probability and statistical independence, the binomial distribution, algebra of the expectation operator, discrete bivariate distributions, covariance, variance of a linear function of random variables, the normal and t distributions, sampling distributions, point and interval estimation, hypothesis testing and an introduction to ordinary least squares. Additional topics may be included at the instructor's discretion. Examples and assignment questions are drawn from economics and finance.</td>
<td>ECON<em>1100, (ECON</em>1050, or FARE<em>1040), (1 of MATH</em>1000, MATH<em>1030, MATH</em>1050, MATH<em>1080, MATH</em>1200)</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*2770</td>
<td>Introductory Mathematical Economics</td>
<td>This course applies the elements of calculus and matrix algebra to simple microeconomic and macroeconomic problems.</td>
<td>ECON<em>1100, (ECON</em>1050, or FARE<em>1040), (1 of MATH</em>1000, MATH<em>1030, MATH</em>1050, MATH<em>1080, MATH</em>1200)</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
<tr>
<td>ECON*3100</td>
<td>Game Theory</td>
<td>This course introduces students to non-cooperative game theory, which is an important method of analysis for economics situations involving small numbers of interacting economic agents. The course is centered on the concept of Nash equilibrium, and applies this equilibrium concept to static and dynamic games with full as well as incomplete information. The purpose of the course is to enable students to take any economic situation, find an economic model (game) that depicts the incentives facing the participants, and analyze the game to predict the behaviour of the economic agents.</td>
<td>ECON<em>2310, ECON</em>2410, (ECON<em>2770 or MATH</em>1210)</td>
<td>Department of Economics and Finance</td>
<td></td>
</tr>
</tbody>
</table>

**ECON*2770 Introductory Mathematical Economics**

This course applies the elements of calculus and matrix algebra to simple microeconomic and macroeconomic problems.

**ECON*3100 Game Theory**

This course introduces students to non-cooperative game theory, which is an important method of analysis for economics situations involving small numbers of interacting economic agents. The course is centered on the concept of Nash equilibrium, and applies this equilibrium concept to static and dynamic games with full as well as incomplete information. The purpose of the course is to enable students to take any economic situation, find an economic model (game) that depicts the incentives facing the participants, and analyze the game to predict the behaviour of the economic agents.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** ECON*2310, ECON*2410, (ECON*2770 or MATH*1210)

**Restriction(s):** ECON*3770

**Department(s):** Department of Economics and Finance
ECON*3300 Economics of Health and the Workplace U (3-0) [0.50]
This course will introduce students to concepts of health economics with particular relevance to workplace issues. Topics to be covered include the determinants of health, the demand for and supply of health care, the market for health care providers, health insurance, public and private, the role of health insurance in the labour market, whether not having to provide comprehensive health insurance to their workers gives Canadian firms an edge over their American competitors, workplace health risks and their effects on working conditions and salaries, workplace wellness programs and their evaluation, and the analysis of the cost effectiveness of health interventions.
Prerequisite(s): ECON*2310, (1 of ECON*2740, PSYC*2010, STAT*2040, STAT*2050, STAT*2060, STAT*2080, STAT*2090, STAT*2100, STAT*2120)
Department(s): Department of Economics and Finance

ECON*3360 The Strategy of Mergers and Acquisitions F (3-0) [0.50]
As changes occur in product markets, public policy, and technology, the scope and scale required for companies to be competitive often changes as well. This course examines the role of mergers and acquisitions (M&A) in repositioning companies to remain competitive, to grow, or to exit. The course also examines how M&A can create value across a range of company types and situations. A means of assessment of M&A success or failure is provided and the course outlines the processes and skills required for successful M&A strategies, relevant to executives and supporting professional services in most industries today.
Prerequisite(s): ECON*2310, ECON*2410, ECON*2560
Department(s): Department of Economics and Finance

ECON*3400 The Economics of Personnel Management U (3-0) [0.50]
In this course, we examine the economics of personnel management in organizations. Using mainstream microeconomic and behavioural economic theory, we will consider such issues as recruitment, promotion, financial and non-financial incentives, compensation, job performance, performance evaluation, and investment in personnel. The interplay between theoretical models and empirical evidence will be emphasized in considering different approaches to the management of personnel.
Prerequisite(s): ECON*2310 or ECON*2200
Department(s): Department of Economics and Finance

ECON*3460 Introduction to Finance F (3-0) [0.50]
This course examines some important principles of the theory of finance which underlie investment (capital budgeting) and associated financing decisions of financial managers. These decisions are necessarily interdependent and typically carried out under conditions of uncertainty regarding the future values of key economic variables, for example, cash flows. Problems, illustrations and short case studies are used to demonstrate how finance theory can be applied and assist financial managers to make optimal decisions. (Not open to B.Comm. MEIF or MEIF/C students.)
Offering(s): Last offering – Fall 2013
Prerequisite(s): ECON*1050, ECON*1100, (1 of ECON*2740, PSYC*2010, STAT*2060, STAT*2080)
Restriction(s): For B.Comm. students only. B.Comm.(MEIF) not allowed to take this course.
Department(s): Department of Economics and Finance

ECON*3500 Urban Economics U (3-0) [0.50]
This course is designed to apply the basic principles of intermediate economic theory to problems facing urban areas with emphasis on Canada. Topics to be covered include such things as housing, urban poverty, municipal financing, transportation.
Prerequisite(s): ECON*2310
Department(s): Department of Economics and Finance

ECON*3520 Labour Economics U (3-0) [0.50]
A study of the labor market, wage determination and the relationship between wages, employment, and prices.
Prerequisite(s): ECON*2310, (1 of ECON*2740, PSYC*2010, STAT*2040, STAT*2050, STAT*2060, STAT*2080, STAT*2090, STAT*2100, STAT*2120)
Department(s): Department of Economics and Finance

ECON*3530 Industrial Organization U (3-0) [0.50]
This course examines industries in which firms have the potential to exercise market power. Topics include how the competitive environment affects the behaviour of firms, measuring the extent of market power on welfare. The performance of markets under monopolies, dominant firms, cartels and oligopolies is examined and related aspects of Canadian competition policy and regulations are discussed.
Prerequisite(s): ECON*2310, (ECON*2770 or MATH*1210)
Department(s): Department of Economics and Finance

ECON*3580 Economics of Regulation U (3-0) [0.50]
A study of the economic reasons for government intervention in the marketplace. Emphasis will be placed on the role of crown corporations, regulatory agencies, regulation rules and public sector price-setting in the Canadian economy.
Prerequisite(s): ECON*2310
Department(s): Department of Economics and Finance

ECON*3610 Public Economics U (3-0) [0.50]
This course examines the interventionist role of government in the economy. It examines several sources of market failure which are used to justify government intervention. These include public goods, externalities and redistribution. The course also evaluates alternative sources of government revenue from the perspectives of both equity and efficiency. These include the personal and corporate income taxes, sales taxes and wealth taxes.
Prerequisite(s): ECON*2310
Department(s): Department of Economics and Finance

ECON*3620 International Trade U (3-0) [0.50]
An introduction to the general equilibrium analysis of international trade, international factor movements and commercial policy. Special emphasis is given to Canada's international trade relationships.
Prerequisite(s): ECON*2310
Department(s): Department of Economics and Finance

ECON*3660 Economics of Equity Markets U (3-0) [0.50]
This course studies the economic literature regarding the determination of security prices and the operation of the stock market.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): ECON*2310, (ECON*2560 or ECON*3560)
Department(s): Department of Economics and Finance

ECON*3710 Advanced Microeconomics FW (3-1) [0.50]
This course provides an in-depth treatment of consumer and producer theory leading to the general equilibrium model of the economy and the study of welfare economics.
Prerequisite(s): ECON*2310, (ECON*2770 or MATH*1210). A grade average of 70% or more in these courses is recommended.
Department(s): Department of Economics and Finance

ECON*3720 History of the World Economy Since 1850 U (3-0) [0.50]
The focus of the course is the study of the evolution of the world economy since 1850. Topics may include the costs and benefits of empire to Britain, Anglo-German trade rivalry, the rise to prominence of ’settler colonies’, economic growth in the Third World, reparations and war debt, agricultural overproduction, origins of the Great Depression, the 1945-1973 boom in world production and trade.
Prerequisite(s): ECON*1050, ECON*1100, (1 of ECON*2310, EURO*1050, HIST*2450, HUMN*2070, IDEV*2010, IDEV*2500)
Department(s): Department of Economics and Finance

ECON*3730 Europe and the World Economy to 1914 U (3-0) [0.50]
This course surveys the world economy with a particular focus on the industrial revolution in Europe, demographic change, the rise to prominence of the ’settler colonies’, the origins of international inequality and the experience of globalization during the later nineteenth century. Particular attention is given to international trade, capital flows and migration.
Prerequisite(s): ECON*1050, ECON*1100, (1 of ECON*2310, EURO*1050, EURO*2070, HIST*2450, HUMN*2070, IDEV*2010, IDEV*2500)
Department(s): Department of Economics and Finance

ECON*3740 Introduction to Econometrics F (3-1) [0.50]
This computer-based course involves the specification and estimation of economic models and the testing of economic hypotheses using appropriate test statistics. Topics include the summation operator, expectation operator, ordinary least squares estimation, dummy variables, seasonality, multicollinearity, heteroskedasticity, autocorrelation, data sources (including uses of the Data Resource Centre). Additional topics may be included at the instructor's discretion. Heavy emphasis will be placed on applications and writing up results. Some use of spreadsheet software (e.g. QuattroPro, Excel) and statistical software (e.g. TSP, SHAZAM) will be required.
Prerequisite(s): ECON*2310, ECON*2410, (1 of ECON*2740, STAT*2040, STAT*2060, STAT*2080), (ECON*2770 or MATH*1210)
Department(s): Department of Economics and Finance

ECON*3760 Fundamentals of Derivatives W (3-0) [0.50]
This course covers the fundamentals of derivatives with emphasis on theory and empirical applications in the context of corporate price risk management. Issues of corporate governance and business ethics as they relate to price risk management will be considered.
Prerequisite(s): ECON*2310, (1 of ECON*2560, ECON*3460, ECON*3560)
Restriction(s): AGEC*4240, FARE*4240
Department(s): Department of Economics and Finance
ECON*3810 Advanced Macroeconomics W (3-0) [0.50]
This course provides an advanced study of a wide range of issues in intertemporal macroeconomics. When constructing macroeconomic models in this course we will explicitly take into account microeconomic foundations. The models constructed will be used to study short-run fluctuations (or business cycles) and long term growth, and to explain cross country income disparities. Topics also include open economy macroeconomic issues.
Prerequisite(s): ECON*2410, (ECON*2740 or STAT*2040), (ECON*2770 or MATH*1210)
Equate(s): ECON*3600
Department(s): Department of Economics and Finance
ECON*3860 International Finance F (3-0) [0.50]
This course focuses on international macroeconomic issues: the balance of payments; models of exchange rate determination; foreign exchange risk and covered interest arbitrage; alternative exchange rate regimes; small versus large economies; monetary and fiscal policy in an open economy.
Prerequisite(s): ECON*2410, (ECON*2560 or ECON*3560 )
Equate(s): ECON*3600
Department(s): Department of Economics and Finance
ECON*3960 Money, Credit and the Financial System U (3-0) [0.50]
This course explores the economics of banking, other financial institutions and credit markets.
Prerequisite(s): ECON*2410, (1 of ECON*2560, ECON*3560, REAL*2820)
Equate(s): ECON*3510
Department(s): Department of Economics and Finance
ECON*4400 Economics of Organizations and Corporate Governance U (3-0) [0.50]
This course introduces students to the latest developments in the economic analysis of the inside workings of firms. The course is centered on the concept of organizational structure, which is made up of three variables: allocation of decision rights, performance evaluation and performance incentives. The course tries to explain the diversity of economic organizations, and more generally, why economic activity is sometimes carried out through firms and sometimes through markets.
Offering(s): Offered through Distance Education format only,
Prerequisite(s): ECON*2310 Students must have completed a minimum of 12 credits.
Department(s): Department of Economics and Finance
ECON*4500 Topics in Urban Economics U (3-0) [0.50]
This course will investigate selected theoretical and applied topics in urban economics in depth. Among topics which might be treated are location theory, the theory of spatial structure, transportation economics, the economics of housing, the economics of land use regulation, urban public finance.
Prerequisite(s): ECON*3740, (ECON*3710 or ECON*3500)
Department(s): Department of Economics and Finance
ECON*4560 Advanced Topics in Finance U (3-0) [0.50]
This course will examine selected advanced topics in finance, such as optimal capital structure under asymmetric information; theoretical and empirical analysis of mergers and acquisitions; asset pricing theory; pricing derivative securities; and financial econometrics.
Prerequisite(s): (ECON*2560 or ECON*3560 ), ECON*3710, (1 of ECON*3100, ECON*3770, ECON*3810, ECON*4700), ECON*3740, (2 of ECON*3360, ECON*3510, ECON*3660, ECON*3760, FARE*4240, ECON*3680, ECON*3960)
Department(s): Department of Economics and Finance
ECON*4640 Applied Econometrics I F (3-0) [0.50]
This course discusses the classical linear regression model and its extensions including generalized least squares and the theory and application of F tests. The maximum likelihood principle is introduced, as are alternative approaches to testing, e.g. LM, LR and Wald tests. Additional topics may be included at the instructor's discretion. Matrix algebra is used and proof of the Gauss-Markov theorem is included, but discussion of proofs is in general limited in order to allow substantial applications to data using statistical software such as TSP, SHAZAM, SAS, STATA.
Prerequisite(s): ECON*3740
Equate(s): ECON*4740
Department(s): Department of Economics and Finance
ECON*4660 Financial Markets Risk Management U (3-0) [0.50]
This course covers the advanced theory and applications of financial derivatives (for underlying assets such as equity and debt instruments, and exchange rate instruments) as it relates to the financial strategy of the firm. Specific emphasis will be devoted to the development of a comprehensive and coherent set of risk management policies and controls.
Prerequisite(s): 1 of AGEC*4240, ECON*3510, ECON*3760, ECON*3960, FARE*4240
Department(s): Department of Economics and Finance
ECON*4700 Advanced Mathematical Economics F (3-1) [0.50]
This course provides students with the necessary mathematical skills required to build rigorous models in economics, including differential and integral calculus, optimization and comparative statics analysis and advanced topics in linear algebra. It continues in the second half with application to modelling in a particular area of economics. The specific area will vary from year to year, and can include such topics as general equilibrium modelling, mathematical finance models, or economics of the environment.
Prerequisite(s): ECON*3710, ECON*3740
Department(s): Department of Economics and Finance
ECON*4710 Advanced Topics in Microeconomics F (3-0) [0.50]
An intensive study of the scope, methodology, and content of contemporary microeconomics; selected topics in partial and general equilibrium analysis.
Prerequisite(s): ECON*3710
Department(s): Department of Economics and Finance
ECON*4720 Topics in Economic History U (3-0) [0.50]
This course uses economic theory to analyse the process of historical economic change.
Prerequisite(s): 12.50 credits including (1 of ECON*2310, ECON*2720, ECON*3720, ECON*3730)
Department(s): Department of Economics and Finance
ECON*4750 Topics in Public Economics U (3-0) [0.50]
This course examines selected topics related to the expenditure and taxation functions of government. Topics may include issues in public good theory such as the free rider problem, the problem of eliciting truthful revelation of preferences and the use of taxes as a corrective device for externalities. The course may also address optimal taxation as well as tax evasion. Throughout this course the trade-off between efficiency and equity is emphasized.
Prerequisite(s): ECON*3710
Department(s): Department of Economics and Finance
ECON*4760 Topics in Monetary Economics U (3-0) [0.50]
Selected topics in monetary economics such as theories of the demand for and supply of money, the nature and role of private banks and central banks, the transmission processes of monetary policy are examined.
Prerequisite(s): ( ECON*3600 or ECON*3810), ECON*3740, (1 of ECON*3510, ECON*3710, ECON*3960)
Department(s): Department of Economics and Finance
ECON*4780 Topics in Industrial Organization U (3-0) [0.50]
Selected topics in the theoretical and empirical study of the organization and performance of firms and markets are covered in this course. Topics may include: strategic behaviour of firms such as actions to deter entry of rivals, pre-emptive choice of location and product quality, and research and development; the regulation of firms under uncertainty; econometric analysis of the use of market power; and modern advances in the theory of the firm.
Prerequisite(s): ECON*3530, ECON*3740
Department(s): Department of Economics and Finance
ECON*4790 Topics in Labour Market Theory U (3-0) [0.50]
Selected topics in advanced labour market theory with emphasis on empirical evidence for the Canadian labour market are covered in this course.
Prerequisite(s): ECON*3740, (ECON*3710 or ECON*3520)
Department(s): Department of Economics and Finance
ECON*4800 Competitiveness and Strategic Advantage U (3-0) [0.50]
This course is about the creation and maintenance of long-term vision for the corporation from the perspective of the general manager. It is concerned with both the determination of strategic direction and the management of the strategic process.
Prerequisite(s): 14.50 credits including (1 of AGEC*3320, BUS*3320, MGMT*3320), ECON*2310, (ECON*2560 or ECON*3560 )
Department(s): Department of Economics and Finance
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Title</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON*4810</td>
<td>Advanced Topics in Macroeconomics</td>
<td>This course explores the theory of complex aggregate economic models; their assumptions, construction, and use in the analysis of macroeconomic activity.</td>
<td>(ECON<em>3600 or ECON</em>3810), ECON<em>3710, ECON</em>3740</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4830</td>
<td>Economic Development</td>
<td>A study of the theories, problems and policies of economic growth with special reference to underdeveloped countries.</td>
<td>ECON*2310</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4840</td>
<td>Applied Econometrics II</td>
<td>This is a continuation of ECON*4640 and deals with asymptotic theory, maximum likelihood estimation, instrumental variables, simultaneous equation models and selected topics such as models for limited dependent variables, models for panel data, ARCH models, units roots and error correction models. There will be applications to data using statistical software.</td>
<td>ECON*4640</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4860</td>
<td>Seminar in Current Economic Problems</td>
<td>In a seminar setting, selected contemporary economic problems are examined.</td>
<td>(ECON<em>3600 or ECON</em>3810), ECON<em>3710, ECON</em>3740</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4880</td>
<td>Topics in International Economics</td>
<td>Selected topics involving the advanced analysis of the causes and effects of trade and financial flows and international factor movements are covered in this course.</td>
<td>(1 of or ECON<em>3610, ECON</em>3810, ECON<em>3860), (ECON</em>3710 or ECON*3620)</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4890</td>
<td>History of Economic Thought</td>
<td>A study of the development of economic theory, the tools of economic analysis, and the evaluation of economics as a science, together with an analysis of the circumstances affecting this development.</td>
<td>ECON<em>2310, ECON</em>2410</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4900</td>
<td>Special Study in Economics</td>
<td>The special study option is designed to provide senior undergraduate students with an opportunity to pursue an independent course of study. The subject matter will be related to regular 4000 level courses. Students will be required to submit a major paper/report on the subject matter studied. Formal agreement between the student and instructor of the course is required as well as the approval of the department chair or designate.</td>
<td>(ECON<em>3600 or ECON</em>3810), ECON<em>3710, ECON</em>3740</td>
<td>Department of Economics and Finance</td>
</tr>
<tr>
<td>ECON*4910</td>
<td>Special Study in Economics</td>
<td>Same description as for ECON*4900.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON*4930</td>
<td>Environmental Economics</td>
<td>This course is an advanced treatment of the interrelationship between economic activities and the state of the natural environment from an economics perspective.</td>
<td>14.50 credits including ECON<em>2310, ECON</em>2410, ECON*2770</td>
<td>Department of Economics and Finance</td>
</tr>
</tbody>
</table>
Environmental Design and Rural Development

School of Environmental Design and Rural Development

EDRD*1400 Introduction to Design W (3-0) [0.50]
This course is designed to increase visual awareness and recognition of natural and planned design elements in the environment. Students will investigate the roles of designers and seek to develop an understanding of design as an applied process that responds to human needs.
Equate(s): MCS*1400
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): School of Environmental Design and Rural Development

EDRD*2020 Interpersonal Communication F (3-0) [0.50]
This course introduces dyadic and small-group communication. The focus is on communication style and effectiveness with attention to verbal and nonverbal communication, listening behaviour and conflict.
Offering(s): Offered through Distance Education format only.
Department(s): School of Environmental Design and Rural Development

EDRD*2650 Introduction to Planning and Environmental Law F,W (3-0) [0.50]
The goal of the course is to introduce the students to the principles and processes that govern the management of land use and the protection of the environment. This will be done through an examination of the key legislation and regulations applied to land use and the environment.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 5.00 credits
Department(s): School of Environmental Design and Rural Development

EDRD*3000 Program Development and Evaluation W (3-0) [0.50]
Concepts and processes of program development and evaluation of rural extension programs. Programs designed with client involvement, situational analysis and priority setting will receive particular attention.
Prerequisite(s): 10.00 credits
Equate(s): REXT*3050, REXT*4050
Department(s): School of Environmental Design and Rural Development

EDRD*3120 Educational Communication F (3-0) [0.50]
Practical and effective ways of communicating information to a broad audience via the media, focusing mainly on print media (newspapers and magazines) and agricultural media. Strong emphasis on writing and preparing ready-to-use material and strategies for getting it published. (Students will develop an understanding of the news/communications business and find where they can fit into it or use it to their advantage to get a job. Contact with professionals will be a major part of the course).
Prerequisite(s): 10.00 credits
Equate(s): REXT*3050
Department(s): School of Environmental Design and Rural Development

EDRD*3140 Organizational Communication W (3-0) [0.50]
This course explores the application of communication process theory to organizations with special emphasis on internal organizational processes experienced at individual, group and organizational levels. Students examine communication in different organizational contexts including civil society, government, business and transnational corporations.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 5.00 credits
Restriction(s): REXT*3100
Department(s): School of Environmental Design and Rural Development

EDRD*3160 International Communication W (3-0) [0.50]
This course examines the role of communication in global development. Emphasis is on the application of interpersonal, intercultural communications and the mass media in the development process.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 10.00 credits
Restriction(s): REXT*3060
Department(s): School of Environmental Design and Rural Development

EDRD*3400 Sustainable Communities F (2-1) [0.50]
The structure, function and trends affecting agri-food community settings including historical, ecological and social factors, institutions, agencies and change processes are discussed. The agricultural role of the Provincial Government and the contemporary impact of the agri-industrial complex on Ontario communities will be considered mainly from a comparative perspective. Related topics will include physical infrastructure, political conflicts, labour markets, settlement patterns, housing, gender relations, landscape management, quality of life, sustainability and the promotion of community leadership.
Prerequisite(s): AGR*1250 or 10.00 credits
Department(s): School of Environmental Design and Rural Development

EDRD*3450 Watershed Planning Practice F,W (3-0) [0.50]
An introduction to the principles and practice of watershed-based planning, with an emphasis on Ontario, but with reference to other parts of Canada, the U.S. and international contexts. History of water resource use and abuse, basic concepts of hydrology, water resource management, ecosystem approaches, and planning theory are also included.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 10.00 credits or Instructor consent.
Equate(s): UNIV*3400
Department(s): School of Environmental Design and Rural Development

EDRD*3500 Recreation and Tourism Planning F,W (3-0) [0.50]
Application of planning theory to recreation and tourism in the private and public sectors; approaches to implementing plans, and strategies for involving stakeholders in the planning process. Focus will also be on the impact of various approaches to planning recreation and tourism.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 10.00 credits
Equate(s): UNIV*3500
Department(s): School of Environmental Design and Rural Development

EDRD*4010 Tourism Planning in the Less Developed World W (3-0) [0.50]
This course will provide a discussion and investigation of tourism from an interdisciplinary point of view. The subject of tourism development cuts across many disciplines and is fundamental to a variety of scholars and practitioners working in tourism and development generally. While a variety of important theories and planning practices from a variety of disciplines have been selected for study, planning and community development theory will provide the overarching perspective. The features of planning theories and models stress analysis and intervention into human and environmental systems. This perspective begins with the view that tourism is a complicated human construct and as such needs to be structured and guided in order to maximize the benefits to all stakeholders in the system.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 5 credits
Department(s): School of Environmental Design and Rural Development

EDRD*4020 Rural Extension in Change and Development F (3-0) [0.50]
The planning and management of development programs with emphasis on the role of non-formal education and counselling in influencing behavioral change and adoption of innovation. Case studies include cross cultural and international considerations.
Prerequisite(s): 10.00 credits
Equate(s): REXT*4020
Department(s): School of Environmental Design and Rural Development

EDRD*4060 Agricultural Communication II W (3-0) [0.50]
Application of practical and effective writing and communication techniques, mainly through the production of print publications and the further development and application of journalistic writing and editing skills. Special emphasis on issues important to the agri-food industry.
Prerequisite(s): 1 of EDRD*3050, REXT*3050 , equivalent
Equate(s): REXT*4060
Department(s): School of Environmental Design and Rural Development

EDRD*4120 Leadership Development in Small Organizations F (3-0) [0.50]
The main theories of leadership will be discussed with exploration of the current literature, practice leadership skills and perform relevant activities in an on-line environment. Emphasis will be placed on the communication challenges facing leaders in small organizations and the importance of developing a culture of shared leadership.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 10.00 credits
Restriction(s): REXT*4100
Department(s): School of Environmental Design and Rural Development
**EDRD*4500 Planning Industrial Ecology: Design for Sustainability W (3-0) [1.00]**

This course informs scientists, engineers, planners, and managers by providing them with: systems-analytic frameworks to critically examine processes, products, infrastructure, management systems and public policies from the perspective of environmental sustainability; and the skill set to guide the design of appropriate responses.

**Offering(s):** Offered through Distance Education format only.

**Prerequisite(s):**
- 10.00 credits

**Equate(s):**
- UNIV*4500

**Department(s):** School of Environmental Design and Rural Development
Engineering

School of Engineering

Students who are not registered in the B.Eng. degree program may take no more than 3.00 Engineering credits (ENGG*XXXX) credits.

Some ENGG* courses have priority access restrictions. Enrolment in these courses is restricted to students registered in the B.Eng. Degree program. All other students will require a waiver form to be signed by the B.Eng. Program Counsellor.

ENGG*1070 Occupational Health and Safety W (2-0) [0.25]
This course presents the legal implications of occupational health and safety as expressed in the Environmental and Occupational Health and Safety Act, and exposes students to methodologies designed to ensure compliance with the Act. The course stresses safety initiatives and deals with specific safety issues such as noise levels, biosafety, hazardous waste management, safety in the workplace, radiation safety and industrial safety.
Restriction(s): Registration in the B.Eng. Program
Department(s): School of Engineering

ENGG*1100 Engineering and Design I F (2-4) [0.75]
Introduction to engineering design by means of selected problems. Students integrate basic science, mathematics, and complementary studies to develop and communicate engineering solutions to specific needs using graphical, oral, and written means. Application of computer-aided drafting, spreadsheets, and other tools to simple engineering design problems. The practice of professional engineering and the role of ethics in engineering.
Restriction(s): Registration in the B.Eng. Program
Department(s): School of Engineering

ENGG*1210 Engineering Mechanics I F,W (3-1) [0.50]
The fundamental principles of Newtonian mechanics; statics of particles in 2-D space; equilibrium of rigid bodies in 2-D; distributed forces; friction, linear and angular momentum of rigid bodies; conservation of energy; principles of impulse and momentum; and, plane motion of rigid bodies.
Department(s): School of Engineering

ENGG*1500 Engineering Analysis W (3-1) [0.50]
This course deals with engineering applications of matrix algebra, vector spaces and computer techniques to solve linear systems. Topics include linear transformations, eigenvalues and eigenvectors, diagonalization and their applications. Additional topics include complex variable algebra, multi-variable functions, partial derivatives, maxima and minima.
Prerequisite(s): MATH*1200
Restriction(s): MATH*2150
Department(s): School of Engineering

ENGG*2100 Engineering and Design II F,W (2-4) [0.75]
This course is a progression in engineering design skills with particular emphasis on computer usage in design, oral communication of solutions and team skills. Computer usage in design will include advanced CAD/CAM/CAE tools; and database management software. An introduction to safety in engineering practice and design, and the concept of sustainable development are covered.
Prerequisite(s): Completion of 4.0 credits including ENGG*1100
Department(s): School of Engineering

ENGG*2120 Material Science F,W (3-2) [0.50]
Study of the mechanical, electrical, magnetic, optical and thermal properties of solids. Atomic order and disorder in solids, single-phase metals, and multilayer materials (their equilibrium and micro-structure) are examined as a basis for understanding the causes of material properties. Intertwoven throughout the course is an introduction to materials selection and design considerations.
Prerequisite(s): CHEM*1040, PHYS*1130
Department(s): School of Engineering

ENGG*2160 Engineering Mechanics II F (3-1) [0.50]
Fundamental principles of the mechanics of deformable materials; stress and strain; Mohr's circle for transformation of stress and strain; deflection under load; design of beams, shafts, columns and pressure vessels; failure theory and design.
Prerequisite(s): ENGG*1210, ENGG*1500, 0.50 credits in calculus
Department(s): School of Engineering

ENGG*2180 Introduction to Manufacturing Processes W (3-2) [0.50]
This course is designed to provide students with an overview of a wide variety of manufacturing processes involved in industrial activities. While most of the manufacturing processes are to be introduced during the course, more emphasis will be given on those processes which are more common in industry, namely material removal processes, casting, and forming. In addition to introducing the various manufacturing process, mathematical models and several empirical data and equations describing the various manufacturing processes will be covered in order to provide the students with a better understanding of the relations between the parameters involved.
Prerequisite(s): ENGG*2160
Co-requisite(s): ENGG*2120
Department(s): School of Engineering

ENGG*2230 Fluid Mechanics F,W (3-2) [0.50]
Analysis of steady ideal and viscous fluid flow systems using the Continuity, Bernoulli and Momentum equations. Boundary layer theory is treated in terms of viscous and pressure drag, lift and its importance in heat and mass transfer. Dimensional analysis and dynamic similarity are studied to provide an understanding of flow systems analysis and modeling. Introduction to pipe flow and open channel flow.
Prerequisite(s): ENGG*1210, MATH*1210
Department(s): School of Engineering

ENGG*2340 Kinematics and Dynamics W (3-3) [0.50]
The course will cover kinematic and dynamic analysis including graphical and analytical methods for kinematic analysis of space, mechanisms and elementary body motion in space, static and dynamic force analyses of mechanisms, gyroscopic forces, dynamics of reciprocating and rotating machinery, cam and gear mechanisms and specifications.
Prerequisite(s): ENGG*1210
Department(s): School of Engineering

ENGG*2400 Engineering Systems Analysis F (3-1) [0.50]
Analytical description and modeling of engineering systems such as mechanical, electrical, thermal, hydraulic, biological and environmental systems. Applications of multivariable calculus, linear algebra and differential equations to simulate and analyse such systems.
Prerequisite(s): ENGG*1210, ENGG*1500, MATH*1200, MATH*1210, PHYS*1130
Co-requisite(s): MATH*2270
Department(s): School of Engineering

ENGG*2410 Digital Systems Design Using Descriptive Languages F (3-3) [0.50]
Review of Boolean algebra and truth tables, Karnaugh maps. Design, synthesis and realization of combinational circuits. Design, synthesis and realization of sequential circuits. VHDL: structural modeling, data flow modeling, synchronous & asynchronous behavior descriptions, algorithmic modeling. Designing with PLDs. Digital design with SM charts. Designing with PGAs and complex programmable logical devices. Hardware testing and design for testability. Hierarchy in large designs. The course will primarily be concerned with the design of multi-input, multi-output digital controllers which provide the central control signals that orchestrate the collection of hardware devices (from SSI to VLSI) found in a digital system. An introduction to FPGA-based, as well as microprocessor-based digital systems design will be given. Design examples will include systems such as UART, microcontroller CPU, ALU and data acquisition system.
Prerequisite(s): ( CIS*1650 or CIS*1500), PHYS*1130
Department(s): School of Engineering

ENGG*2450 Electric Circuits W (3-2) [0.50]
This course explores the fundamentals of electric circuit analysis. Course topics include: lumped circuit abstraction; circuit elements and their characteristics; Ohm's and Kirchhoff's laws; resistive circuits; nodal and mesh analysis; linearity and superposition principles; fundamental circuit theorems; introduction to the ideal operational amplifier model; energy storage elements and dynamics of first and second order circuits including switched circuits; alternate-current circuits and sinusoidal steady-state analysis with phasor methods.
Prerequisite(s): ENGG*2400, (PHYS*1010 or PHYS*1130)
Department(s): School of Engineering

ENGG*2470 Water Management W (3-0) [0.50]
The influence of fundamental engineering and hydrologic principles on the choices available for management of water on a watershed basis is demonstrated for representative techniques used in management for water supply, irrigation, flood control, drainage and water pollution control. Selected problems are studies to reveal the technical, environmental, legal, jurisdiction, political, economic and social aspects of water management decisions.
Prerequisite(s): 5.00 credits including CHEM*1040
Department(s): School of Engineering
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGG*2560</td>
<td>Environmental Engineering Systems W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*2660</td>
<td>Biological Engineering Systems I W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3050</td>
<td>Embedded Reconfigurable Computing Systems W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3070</td>
<td>Integrated Manufacturing Systems F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3080</td>
<td>Energy Resources &amp; Technologies F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3100</td>
<td>Engineering and Design III W</td>
<td>0.75</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3120</td>
<td>Computer Aided Design and Manufacturing W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3130</td>
<td>Modelling Complex Systems W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3140</td>
<td>Mechanical Vibration F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3150</td>
<td>Biomechanics W</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3160</td>
<td>Biological Engineering Systems II F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3170</td>
<td>Biomaterials F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3180</td>
<td>Air Quality F</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>ENGG*3190</td>
<td>Logic Synthesis</td>
<td>0.50</td>
<td>School of Engineering</td>
</tr>
</tbody>
</table>

**ENGG*2560 Environmental Engineering Systems W (3-2) [0.50]**

Analysis techniques for natural and engineered systems including chemical, physical and biological processes. Mass balance analysis for steady state and unsteady state situations. Analysis under both equilibrium and non-equilibrium conditions. Reactor types including batch, plug-flow, CSTR. Noise pollution, control and prevention.

**Prerequisite(s):** CHEM*1050, MATH*2270

**Department(s):** School of Engineering

**ENGG*2660 Biological Engineering Systems I W (3-1) [0.50]**

This course deals with the mathematical description and identification of biological systems through: mass and energy balances; reactions in biological systems; and applications in biomedicine, food and bioprocessing.

**Prerequisite(s):** ENGG*2400, MATH*2270, (1 of BIOL*1070, BIOL*1080, BIOL*1090)

**Department(s):** School of Engineering

**ENGG*3050 Embedded Reconfigurable Computing Systems W (3-2) [0.50]**

This course introduces the students to the analysis, synthesis and design of embedded systems and implementing them using Field Programmable Gate Arrays. Topics include: review of digital design concepts; Programmable Logic Devices; Field Programmable Logic Devices; physical design automation (partitioning, placement and routing); Hardware Descriptive Languages; VHDL; Verilog; High Level Languages; System-C; Handle-C; Fixed Point and Floating Point Arithmetic; Hardware Accelerators; Reconfigurable Instruction Set Computers; Hardware Software Co-design techniques; Application of Field Programmable Logic in Embedded Systems.

**Prerequisite(s):** ENGG*2410, ENGG*3640

**Department(s):** School of Engineering

**ENGG*3070 Integrated Manufacturing Systems F (3-2) [0.50]**

Common production machines and manufacturing systems are dealt with, particularly automated systems, robotics, computer control and integration techniques, materials handling, inspection processes and process control. The course addresses societal and environmental issues related to manufacturing.

**Prerequisite(s):** ENGG*2120

**Department(s):** School of Engineering

**ENGG*3080 Energy Resources & Technologies F (3-2) [0.50]**

The challenges of changing the global energy system to reduce dependence on finite fossil energy sources, and transition to environmentally sustainable energy sources, are examined. The reserves, consumption, applications and environmental and human impacts of oil, coal and natural gas usage are examined. The fundamental principles, applications and status of a range of renewable energy sources and technologies will be covered to provide a solid background for further study of sustainable energy.

**Co-requisite(s):** ENGG*3260

**Restriction(s):** ENGG*2030

**Department(s):** School of Engineering

**ENGG*3100 Engineering and Design III W (3-2) [0.75]**

This course combines the knowledge gained in the advanced engineering and basic science courses with the design skills taught in ENGG*1100 and ENGG*2100 in solving open-ended problems. These problems are related to the student's major. Additional design tools are presented, including model simulation, sensitivity analysis, linear programming, knowledge-based systems and computer programming. Complementing these tools are discussions on writing and public speaking techniques, codes, safety issues, environmental assessment and professional management. These topics are taught with the consideration of available resources and cost.

**Prerequisite(s):** Registration in the B.Eng. program and completion of 6.00 credits of ENGG courses including ENGG*2100

**Restriction(s):** Students must have a cumulative average of 60% or higher in all ENGG courses. Restriction waiver requests are handled by the Director, School of Engineering, or designate.

**Department(s):** School of Engineering

**ENGG*3120 Computer Aided Design and Manufacturing W (3-2) [0.50]**

The course presents the elements of solid modelling, creation of parts of increasing complexity and the assembly of parts to form a final design, along with mechanism simulation. The operation and programming of CNC machines is covered.

**Prerequisite(s):** ENGG*2100, ENGG*3280

**Department(s):** School of Engineering

**ENGG*3130 Modelling Complex Systems W (3-2) [0.50]**

This course explores the application of systems thinking to complex global issues. Key topics will include: systems theory, complex adaptive systems, systems tools, and systems approaches. The course will emphasize the role of computational modelling and simulation as a central tool for applying systems thinking to real-world settings.

**Prerequisite(s):** CIS*1500, ENGG*2400, STAT*2120

**Department(s):** School of Engineering

**ENGG*3140 Mechanical Vibration F (3-3) [0.50]**

This course will provide students with an introduction to the fundamental concepts of vibration engineering using both single and multiple degrees of freedom concepts. The free and forced response of these systems will be covered. Emphasis will be placed on the design of vibration suppression and isolation of mechanical systems. Concepts of natural frequencies and mode shapes and their significance in the solution of multiple degrees of freedom problems will be covered. Vibration of rotating machinery, balancing, condition monitoring, and predictive vs. preventative maintenance philosophies will be introduced.

**Prerequisite(s):** ENGG*2340, MATH*2270

**Department(s):** School of Engineering

**ENGG*3150 Biomechanics W (3-2) [0.50]**

The following topics related to biomechanics are covered in this course: kinematic and kinetic analysis techniques; electromyography; current techniques in laboratory instrumentation and biomedical applications.

**Prerequisite(s):** ENGG*2160

**Department(s):** School of Engineering

**ENGG*3160 Biological Engineering Systems II F (3-2) [0.50]**

Mass transfer in biological systems: concepts; gas-liquid mass transfer; membrane transport processes; and heterogeneous reactions. Applications may include fermenter aeration, tissue perfusion, mass transfer limitations in biofilms, microbial flocs and solid tumours, protein recovery and drug delivery.

**Prerequisite(s):** ENGG*2230, ENGG*2660

**Department(s):** School of Engineering

**ENGG*3170 Biomaterials F (3-2) [0.50]**

Physical properties of natural and synthetic (e.g. stainless steel, polymers) materials used in biological engineering applications. Topics will include microstructure and mechanical properties of typical biomaterials, quantification of advanced material properties and behaviours, fabrication, compatibility, biodegradation and mechanical failure. Typical applications will include processing of biomaterials as well as equipment and implant design.

**Prerequisite(s):** ENGG*2120

**Department(s):** School of Engineering

**ENGG*3180 Air Quality F (3-2) [0.50]**


**Prerequisite(s):** ENGG*2230, (ENGG*2560 or ENGG*2660)

**Co-requisite(s):** ENGG*3260

**Department(s):** School of Engineering

**ENGG*3190 Logic Synthesis W (3-2) [0.50]**

This course presents automatic logic synthesis techniques for computer-aided design (CAD) of very large-scale integrated (VLSI) circuits and systems. Topics covered are: two-level Boolean network optimization, multi-level Boolean network optimization, technology mapping for library-based designs and field-programmable gate-array (FPGA) designs, and state-assignment and re-timing for sequential circuits. The course will also cover various representations of Boolean functions such as binary decision diagrams (BDDs) and discuss their applications to logic synthesis.

**Prerequisite(s):** ENGG*2410

**Department(s):** School of Engineering
ENGG*3210 Communication Systems W (3-2) [0.50]
This course is an introduction to the fundamentals of data communication and computer networking. The data communication basics will cover signal transmission and signal encoding techniques such as: multiplexing techniques, signaling, encoding and decoding, error detection and recovery, sliding window techniques. Computer networking basics will cover: communication network components and topologies, multiple access design issues and performance analysis, switching, routing, services and applications, and security. The course will also cover the mathematical tools (Fourier transform, etc.) used in signal analysis.
Prerequisite(s): MATH*2130, STAT*2120
Department(s): School of Engineering

ENGG*3220 Groundwater Engineering W (3-2) [0.50]
This is an introductory course in groundwater engineering, an important area of practice for water resource and environmental engineers. The main goals of the course are: (1) to teach engineering students fundamental concepts in applied quantitative hydrogeology; and (2) to provide understanding of practical engineering tools and approaches for analysis including field and lab work.
Prerequisite(s): ENGG*2380
Department(s): School of Engineering

ENGG*3240 Engineering Economics F (3-0) [0.50]
This course covers the principles of project evaluation; analysis of capital and operating costs of engineering alternatives, benefit-cost ratio; break-even studies, evaluations recognizing risk, replacement and retirement of assets; tax considerations, influence of sources of funds.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): MATH*1210
Restriction(s): Registration in the Engineering program.
Department(s): School of Engineering

ENGG*3250 Energy Management & Utilization W (3-2) [0.50]
This course introduces notions of energy conservation and efficiency, an integrated approach to energy auditing and examples of typical applications (examples include: steam generation and distribution, process or comfort cooling, pumping and compressed air, human needs for modern living, energy consumption in buildings and industry). It also covers pinch technology and its application for energy recovery in industry, and methods to achieve low energy buildings.
Co-requisite(s): ENGG*3430
Restriction(s): ENGG*3030
Department(s): School of Engineering

ENGG*3260 Thermodynamics F (3-0) [0.50]
This course covers macroscopic thermodynamics and its applications to engineering practice. Topics include properties of pure substances and equilibrium, the First Law of thermodynamics (energy transfer and energy balance in closed and flow systems), the Second Law of thermodynamics and its applications (entropy analysis of closed and flow systems, quantification of irreversibilities and inefficiencies, quality of energy, etc.), thermodynamic cycles and exergy.
Prerequisite(s): CHEM*1040, ENGG*2200, ENGG*2400, MATH*2270
Department(s): School of Engineering

ENGG*3280 Machine Design F (3-3) [0.75]
This course provides the concepts, procedures, and analysis techniques necessary to design various mechanical elements commonly found in machines. Failure analysis such as yield criteria and fatigue are covered. Component design includes screws, fasteners, shafts, bearings and lubrication, and gears. The emphasis is on the use of readily available materials, standard component, and appropriate design approaches to achieve safe and efficient system design.
Prerequisite(s): ENGG*2120, ENGG*2160, ENGG*2230, ENGG*2340, ENGG*2450
Department(s): School of Engineering

ENGG*3340 Geographic Information Systems in Environmental Engineering F (3-0) [0.50]
Geographical information system structure and functions. Data structuring and application program development. Data input, display and analysis. Applications in environmental engineering and natural resource development/management. Students will be able to use a GIS software package to build geographical information systems.
Prerequisite(s): (CIS*1500 or CIS*1600 ), (1 of MATH*1000 , MATH*1080, MATH*1200)
Department(s): School of Engineering

ENGG*3370 Applied Fluids and Thermodynamics W (3-2) [0.50]
This course builds on the fundamentals of fluid dynamics and thermodynamics introduced in previous courses by looking at relevant applications. Topics to be covered include: heating, ventilation and air conditioning (HVAC); heat engine systems such as the Carnot cycle for refrigeration and heat pumps and the Rankine cycle for vapour power systems; compressible flow, turbomachinery such as pumps, turbines, and propellers; and an introduction to combustion.
Prerequisite(s): ENGG*2230, ENGG*3260
Co-requisite(s): ENGG*3430
Department(s): School of Engineering

ENGG*3380 Computer Organization and Design W (3-2) [0.50]
This course contains a detailed examination of modern computer organization and techniques for microprocessor architecture design. Topics include - CPU design, instruction set design, addressing modes, operands; data flow design: internal bus structure, data flow signals, registers; control sequence design: hardwired control, decoding, microprogramming; architecture classes: CISC, RISC, and DSP. Memory organization; performance. Students must complete a term project that includes design, implementation, and demonstration of a CPU using a hardware descriptive language like VHDL.
Prerequisite(s): ENGG*2410
Department(s): School of Engineering

ENGG*3390 Signal Processing F (3-2) [0.50]
This course will establish the fundamental analysis and design techniques for signal processing systems. Topics covered include: definition and properties of linear time-invariant systems; impulse response and convolution; continuous-time Laplace transform, Fourier series, Fourier transform, discrete-time Fourier transform, discrete-time Fourier series, fast Fourier transform, Z transform; complex frequency response; filter analysis and design for both continuous and discrete time systems. Students will be able to design continuous-time filters and both design and implement discrete-time digital filters using computer-based tools.
Prerequisite(s): ENGG*2400
Department(s): School of Engineering

ENGG*3410 Systems and Control Theory W (3-2) [0.50]
Modeling, performance analysis and control with potential application to engineering, physical and biological systems. Topics include modeling in time, Laplace and frequency domains. Performance and stability by methods of Hurwitz, Routh, Bode, and Nyquist. Control by ON/OFF and PID Controllers.
Prerequisite(s): ENGG*2400, MATH*2270
Co-requisite(s): ENGG*2450
Department(s): School of Engineering

ENGG*3430 Heat and Mass Transfer W (3-1) [0.50]
Analysis of steady and transient thermal systems involving heat transfer by conduction, convection and radiation and of mass transfer by molecular diffusion and convection. Other topics include the thermal analysis of heat exchangers and heat transfer systems involving a change of state.
Prerequisite(s): ENGG*2230, ENGG*3260, MATH*2270
Department(s): School of Engineering

ENGG*3450 Electrical Devices F (3-2) [0.50]
Semiconductors materials, Silicon, Germanium and other semi-conductors' material. Doping and effects of extrinsic material introduction, conduction in metals and semi-conductors, electrical and thermal characteristics of diodes and transistors; principles of modern electronic devices and their applications in circuits; diodes; bipolar and field effect transistors; circuit integration; operational amplifiers; logic gates.
Prerequisite(s): ENGG*2450
Department(s): School of Engineering

ENGG*3470 Mass Transfer Operations W (3-2) [0.50]
Prerequisite(s): ENGG*2230, ENGG*3260, MATH*2270
Co-requisite(s): ENGG*3430
Department(s): School of Engineering
ENGG*3490 Introduction to Mechatronic Systems Design W (3-2) [0.75]
This course covers the design of mechatronic systems, which are synergistic, combinations of components and controls drawn from mechanical engineering, electronics, control engineering, and computer science. The course emphasizes the integration of these areas through the design process employing the two skills of (1) modeling, analysis, control design, and computer simulation of dynamic systems, and (2) experimental validation of models, analysis and the understanding of the key issues of hardware implementation. The two skills are developed through assignments emphasizing analytical analysis with complementary laboratory exercises. The material covered includes mechatronic system design; a review of kinematics, electronics, modeling, simulation, signals and control; control architectures; sensors including vision; and actuators.
Prerequisite(s): ENGG*3450
Co-requisite(s): ENGG*3410
Restriction(s): ENGG*3400.
Department(s): School of Engineering

ENGG*3510 Electromechanical Devices F (3-3) [0.50]
The aim of this course is to develop an understanding of the electrical and electromechanical principles and their applications as devices used in engineering. The course covers magnetic fields of currents and coils; magnetic materials; magnetic circuits; induced, electric and magnetic fields (EMF), inductance, transformers magnetic forces, permanent magnets and electromagnets. The course examines the principles of variable-reluctance devices, stepper motors, moving-coil devices, direct current (DC) and alternating current (AC) motors. Semiconductors materials and devices, diodes, and transistors; principles of modern electronic devices and their applications in circuits; as well as operational amplifiers and digital logics are also studied.
Prerequisite(s): ENGG*2450, PHYS*1010
Department(s): School of Engineering

ENGG*3570 MEMS and Microfabrication F (3-2) [0.50]
This course presents a broad survey of micro-electro-mechanical systems (MEMS) and microfabrication technologies. It covers silicon and non-silicon microfabrication techniques for microsensors, microactuators, and nanotechnology. It introduces CAD tools and mechanical and electrical issues in designing devices such as micromotors, grippers, accelerometers, and pressure sensors. It discusses limitations and challenges in design and fabrication of MEMS and enables the application of general micromachining principles to developing novel devices.
Prerequisite(s): ENGG*2450, PHYS*1010
Department(s): School of Engineering

ENGG*3590 Water Quality F (3-3) [0.50]
This course builds on the student's experience in chemistry, biology, physics and fluid mechanics, and provides an engineering perspective on: (i) standard methods of water quality analysis for physical, chemical and biological characteristics of water; (ii) significance and interpretation of analytical results, (iii) modeling of water quality in natural systems and (iv) introduction to engineered water and wastewater treatment systems.
Prerequisite(s): ENGG*2230, ENGG*2560, (1 of BIOL*1040, BIOL*1090, MIRC*1020, MIRC*2420), STAT*2120
Department(s): School of Engineering

ENGG*3640 Microcomputer Interfacing F (3-3) [0.50]
This course focuses on the subject of interfacing microcomputers to external equipment. Topics include peripheral devices, hardware interfaces, device driver software and real time programming. Advanced programming: debugging of embedded systems, data structures and subroutine calls, high-level system programming. Interrupts and resets, real time events, signal generation and timing measurements. Synchronous and asynchronous serial communication. Parallel I/O ports and synchronization techniques. I/O interfacing, microcomputer busses, memory interfacing and direct memory access (DMA). Data acquisition topics include signal conditioning analog to digital conversion and digital signal processing.
Prerequisite(s): ENGG*2410, ENGG*2450
Restriction(s): ENGG*4640
Department(s): School of Engineering

ENGG*3650 Hydrology F (3-1) [0.50]
Quantitative study of natural water circulation systems with emphasis on basic physical principles and interrelationships among major processes; characteristics of mass and energy; inputs to and output from watersheds; factors governing precipitation occurrence, evaporation rates, soil-water storage changes, groundwater recharge and discharge, run-off generation; methods of streamflow analysis; mathematical modeling.
Prerequisite(s): (ENGG*2230 or MET*2030), (MATH*1210 or MATH*2080), (STAT*2120 or STAT*2040), and competency in computing.
Department(s): School of Engineering

ENGG*3670 Soil Mechanics F (3-2) [0.50]
Relations of soil physical and chemical properties to strength; soil water systems and interactive forces. Visco-elastic property and pressure-volume relationships of soil systems. Stress-strain characteristics of soil under dynamic loads. Application of engineering problems. Laboratory and field investigation methods.
Prerequisite(s): ENGG*2120, ENGG*2230
Department(s): School of Engineering

ENGG*3700 Optimization for Engineers F (3-2) [0.50]
This course serves as an introduction to optimization. Topics to be covered include but are not limited to: linear programming, sensitivity analysis, linear integer programming technique, dynamic programming, Markov chains, transportation method, decision analysis, and queuing theory.
Prerequisite(s): CIS*1500, MATH*2130, MATH*2270
Department(s): School of Engineering

ENGG*3830 Bio-Process Engineering F (3-1) [0.50]
Application of engineering principles to the processing of biological products in the biological and food industry. Analysis and design of unit processes such as sedimentation, centrifugation, filtration, milling and mixing involving rheology and non-Newtonian fluid dynamics of biological materials. Analysis of heat and mass balances for drying evaporation, distillation and extraction.
Prerequisite(s): ENGG*2230, ENGG*2660
Co-requisite(s): ENGG*3260
Department(s): School of Engineering

ENGG*4000 Proposal for Engineering Design IV S,F,W (0-0) [0.00]
In this course students will prepare a proposal for the design project that will be completed in the Engineering Design IV course in their program of study. Teams normally of 3 to 4 students (single student groups not allowed) will prepare the proposal, providing details on the proposed project, identify the groups members and identify the faculty adviser, who has a P.Eng.. Students are responsible for creating their own design group and securing a faculty advisor.
Prerequisite(s): All 1000 and 2000 level core courses and ENGG*3100
Restriction(s): Registration in semester preceding the last semester of the B.Eng. Program. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering

ENGG*4030 Manufacturing System Design W (3-3) [0.75]
Students work in groups to design a manufacturing system to produce a specific product. Choices must be made about the materials to be used, the methods to manufacture each part of the product and the final assembly and/or packaging process. Attention is paid to economics and efficiency of the overall manufacturing system.
Prerequisite(s): ENGG*3707, ENGG*3120, ENGG*3510, ENGG*4460
Co-requisite(s): ENGG*4050, ENGG*4280
Department(s): School of Engineering

ENGG*4040 Medical Imaging Modalities F (3-2) [0.50]
The course will cover the basic knowledge of medical imaging systems, how they operate and to what uses they can be applied. Systems covered will include x-ray radiography, computed tomography, magnetic resonance imaging, positron emission tomography, gamma cameras, and ultrasound imaging. Emphasis will be on the underlying physics and computation, highlighting factors affecting image quality, patient safety, and clinical use.
Prerequisite(s): MATH*1210, PHYS*1130
Restriction(s): Restricted to students in BENG, BSCH,BMPH
Department(s): School of Engineering

ENGG*4050 Quality Control W (3-2) [0.50]
The basic techniques and regulations surrounding quality control in a generic manufacturing environment are covered. The topics covered include: total quality management including relevant ISO regulations, six sigma, reliability, statistical process control, acceptance sampling and 2k factorial design of experiments.
Prerequisite(s): STAT*2120
Department(s): School of Engineering
ENGG*4060 Biomedical Signals Processing W (3-2) [0.50]
This course will cover the generation of biomedical signals, detection and measurement, and processing. The physiology of electrical signal generation will cover ionic transport in cellular membranes and propagation of electrical signals in cells and tissues. The range of biomedical signals covered includes such common signals as the electromyogram (EMG), the electrocardiogram (ECG), the electroencephalogram (EEG). Detection and measurement will cover electrode technology, instrumentation amplifiers and safety concerns. Processing includes filtering, frequency content analysis, removal of artifacts, signal correlation, and event detection.
Prerequisite(s): ENGG*3390
Department(s): School of Engineering

ENGG*4070 Life Cycle Assessment for Sustainable Design W (3-2) [0.50]
This course will introduce students to the fundamental concepts related to interaction of industrial and environmental/ecological systems, sustainability challenges facing the current generation, and systems-based approaches required to create sustainable solutions for society. Students will understand the concepts and the scientific method as it applies to a systems-based, transdisciplinary approach to sustainability, and will be prepared to identify problems in sustainability and formulate appropriate solutions based on scientific research, applied science, social and economic issues. The basic concepts of life cycle assessment (LCA) will be discussed, along with life cycle inventory (LCI) and life cycle impact assessment (LCIA) including the social and economic dimensions. The application of life cycle assessment methodology using appropriate case studies will be presented.
Prerequisite(s): ENGG*2100, ENGG*3240
Department(s): School of Engineering

ENGG*4080 Micro and Nano-Scale Electronics F (3-2) [0.50]
The purpose of this course is to describe the operating principles of analog integrated micro and nano electronic circuits and to teach how to design and use such circuits systems. Course topics include: device and circuit fabrication in silicon and non-silicon based technologies; operation and layout of active and passive elements; analog and switched-capacitor filters; analog-to-digital and digital-to-analog converters; amplifiers; oscillators and circuits for radio-frequency and optical communications; readout channels for integrated sensors, and analog integrated circuits for mechatronics and bioengineering. The main emphasis is on device models, circuit operation, and design techniques.
Prerequisite(s): ENGG*3450
Department(s): School of Engineering

ENGG*4090 Food and Beverage Engineering W (3-3) [0.75]
Students work in groups to design a system for manufacturing a specific food or beverage product. Choices are made about the specific processes to be used, the final packaging and marketing of the product. Attention is paid to the economics and efficiency of the overall production process.
Prerequisite(s): ENGG*3070, ENGG*3510, MICR*1020
Co-requisite(s): ENGG*2660, ENGG*4050, ENGG*4280
Department(s): School of Engineering

ENGG*4110 Biological Engineering Design IV F,W (2-6) [1.00]
This is the capstone design course for the Biological Engineering program. Teams normally of 3-4 students apply engineering analysis and design principles to a problem involving human health, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.
Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering

ENGG*4120 Engineering Systems and Computing Design IV F,W (2-6) [1.00]
This is the capstone design course for the Engineering Systems and Computing program. Teams normally of 3-4 students apply engineering analysis and design principles to a problem involving control system, computer hardware or computer software technology. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.
Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering

ENGG*4130 Environmental Engineering Design IV F,W (2-6) [1.00]
This is the capstone design course for the Environmental Engineering program. Teams normally of 3-4 students apply engineering analysis and design principles to an environmental engineering problem. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.
Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering

ENGG*4150 Water Resources Engineering Design IV F,W (2-6) [1.00]
This is the capstone design course for the Water Resources Engineering program. Teams normally of 3-4 students apply engineering analysis and design principles to a problem involving water resources or wastewater engineering. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.
Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering

ENGG*4160 Mechanical Engineering Design IV F,W (2-6) [1.00]
This is the capstone design course for the Mechanical Engineering program. Teams normally of 3-4 students apply engineering analysis and design principles to a mechanical engineering problem. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.
Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.
Department(s): School of Engineering
ENGG*4170 Computer Engineering Design IV F,W (2-6) [1.00]

This is the capstone design course for the Computer Engineering program. Teams of normally 3-4 students apply engineering analysis and design principles to a computer engineering problem. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.

Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.

Department(s): School of Engineering

ENGG*4180 Biomedical Engineering Design IV F,W (2-6) [1.00]

This is the capstone design course for the Biomedical Engineering program. Teams of normally 3-4 students apply engineering analysis and design principles to a biomedical engineering problem. A completely specified solution at the level of preliminary or final design is required, including assessment of socio-economic and environmental impact. This is a small group design that requires reports and a poster presentation to a professional standard. Ethics and legal case studies relevant to professional engineering practice are presented during the lectures. Students who have achieved a PASS in ENGG*4000 are eligible for this course and will be added to the course prior to the first day of classes.

Prerequisite(s): ENGG*4000
Restriction(s): Registration in semester 8 (last semester) of the B.Eng. program and in a max. of 3.25 credits registration. Students must have a minimum cumulative average of 60% or higher in ALL ENGG courses. Instructor consent required. Restriction waiver requests are handled by the Director, School of Engineering, or designate.

Department(s): School of Engineering

ENGG*4220 Interdisciplinary Mechanical Engineering Design W (3-3) [0.75]

This is a general design course for students registered in the B. Eng. major in mechanical engineering who wish to develop a broad based mechanical engineering foundation. Students work in groups to develop a general mechanical engineering design. Special attention is paid to the sustainability of the design, its economic feasibility and overall efficiency.

Prerequisite(s): ENGG*3100

Department(s): School of Engineering

ENGG*4230 Energy Conversion F (3-3) [0.75]

The course introduces the technical criteria for the design of efficient energy conversion processes and systems. It covers review of boilers and cycles, fuel and combustion calculations, and fundamentals of both traditional and emerging energy conversion processes and systems for production of thermal, mechanical, and electrical energy. Topics include fossil, biomass, nuclear fuels, wind, solar, geothermal and fuel cells. Mechanisms for storing energy generated from each of these systems are also studied. The course also discusses conversion of automobile, renovation of old fossil fuel fired plant, co-firing of opportunity fuel, waste to energy technology, emission, and economics of energy projects.

Prerequisite(s): ENGG*3080, ENGG*3260
Restriction(s): ENGG*2050

Department(s): School of Engineering

ENGG*4240 Site Remediation W (3-1) [0.50]

Remediation of contaminated sites is done to mitigate impacts to the environment and public health. The course will: review the applicable legislation; identify the important soil, water, air and chemical interactions; review the steps of an environmental risk assessment so that contaminated sites can be identified and evaluated to see if remediation is required; and evaluate and appraise various remediation technologies to complete the soil and groundwater remediation.

Prerequisite(s): ENGG*3220, ENGG*3590

Department(s): School of Engineering

ENGG*4250 Watershed Systems Design W (3-2) [0.75]

This course is a hydrological analysis of watershed systems including stream flow for design of structures and channels, flood warning, flood plain mapping and low-flow characteristics. Hydraulic analysis is applied to the design of dams, reservoirs, control structures, energy dissipation structures, bridges and culverts. An analysis of steady flow profiles, flood waves, and sediment transport is applied in the design of natural and constructed channels and protective works for rivers to achieve environmentally sustainable land use in watershed systems.

Prerequisite(s): ENGG*2230, ENGG*3650

Department(s): School of Engineering

ENGG*4280 Digital Process Control Design W (3-2) [0.75]

Design, analysis synthesis and simulation of process control and automation systems. Automation hardware, process compensation techniques and P.I.D. controllers, design and dynamics of final control elements, computer control and the microprocessor.

Prerequisite(s): ENGG*3410

Department(s): School of Engineering

ENGG*4300 Food Processing Engineering Design W (3-2) [0.75]

This course covers the formulation of mathematical models to describe food processing operations and the response of foods to such operations. Topics include: process evaluation; development and computer-aided design of operations such as thermal processes; and properties of various food forms.

Prerequisite(s): ENGG*3260, ENGG*3830

Department(s): School of Engineering

ENGG*4340 Solid and Hazardous Waste Management F (3-2) [0.50]


Prerequisite(s): ENGG*2560 or ENGG*2660

Department(s): School of Engineering

ENGG*4360 Soil-Water Conservation Systems Design F (3-2) [0.75]

Properties of soils and land use governing the occurrence and magnitude of overland flow, soil erosion, infiltration, percolation of soil water, and variations in soil water storage. Design of soil and water management systems and structures to control soil erosion and protect water quality for environmentally and economically sustainable land use planning. Design of surface and subsurface drainage systems for rural land. Design of sprinkler and trickle irrigation systems.

Prerequisite(s): ENGG*2230, ENGG*3650, ENGG*3670

Department(s): School of Engineering

ENGG*4370 Urban Water Systems Design F (3-2) [0.75]

Estimation of water quantity and quality needed for urban water supply and drainage. Design of water supply, pumping systems, pipe networks and distributed storage reservoirs from analysis of steady and transient, pressurized and free surface flow. Rates of generation of flows and pollutants to sanitary and storm sewers, design of buried pipe and open channel drainage systems with structures for flow and pollution control. Modeling of water systems for sustainable urban development.

Prerequisite(s): ENGG*2230, ENGG*3650

Department(s): School of Engineering

ENGG*4380 Bioreactor Design F (3-2) [0.75]

Topics in this course include: modeling and design of batch and continuous bioreactors based on biological growth kinetics and mass balances; gas-liquid mass transfer for aeration and agitation; instrumentation; and control.

Prerequisite(s): ENGG*3160

Department(s): School of Engineering

ENGG*4390 Bio-instrumentation Design F (3-2) [0.75]

Theory and selection criteria of devices used in measurements in biological systems; design of complete measurement systems including transducers, signal conditioning and recording components; error analysis. Differences between measurements in biological and physical systems.

Prerequisite(s): ENGG*3450

Department(s): School of Engineering
ENGG*4400 Biomechanical Engineering Design W (3-2) [0.75]
This course covers concept development, design, modeling, manufacture and testing of biomechanical devices including athletic equipment, assistive devices, medical implants and tools. Other topics include the biomechanical factors influencing design, regulatory issues, current development trends, and the possible future direction of design and technology.
Prerequisite(s): ENGG*3150, ENGG*3170
Department(s): School of Engineering

ENGG*4420 Real-time Systems Design F (3-3) [0.75]
This course teaches real-time concepts from a system and computing perspective covering topics related to four major areas. Real-time computer control and system modeling area teaches basic real-time design and system modeling concepts for hard and soft real-time computer control applications. Real-time Operating Systems (RTOS) area introduces common kernel objects and inter-task communication and synchronization using examples from current commercial RTOS. Topics in the area of scheduling present theoretical results related to uniprocessor and multiprocessor scheduling algorithms and topics in the area of fault tolerance and reliability present current techniques at software and hardware level.
Prerequisite(s): ENGG*2400, ENGG*3640
Department(s): School of Engineering

ENGG*4430 Neuro-Fuzzy and Soft Computing Systems W (3-0) [0.50]
This course covers the basics of fuzzy systems, neural networks and neuro-fuzzy systems. The main focus is the concepts and algorithms of fuzzy sets, rules, and reasoning, as well as neural network structures, supervised learning and unsupervised learning of neural networks, and hybrid neuro-fuzzy systems. The applications of neural networks and fuzzy systems to control systems, signal processing, systems modeling and systems identification will be presented through examples.
Prerequisite(s): ENGG*3410
Department(s): School of Engineering

ENGG*4440 Computational Fluid Dynamics W (3-2) [0.50]
Computational methods for fluid mechanics form the core of the course. The concepts of modelling are covered including numerical analysis, the governing equations for fluid problems and finite discretization methods. Mathematical models for turbulence are presented and the student is exposed to the use of commercial software for the solution of complex problems in fluid dynamics.
Prerequisite(s): ENGG*2230, ENGG*3370
Department(s): School of Engineering

ENGG*4450 Large-Scale Software Architecture Engineering F (3-2) [0.50]
This course introduces the students to the analysis, synthesis and design of large-scale software systems at the architectural level. This is in contrast to the algorithmic and data structure viewpoint of most software systems. Large-scale software systems are complex, execute on many processors, under different operating systems, use a particular or many language(s) of implementation, and typically rely on system layers, network connectivity, messaging and data management and hardware interfacing. The material covered includes architectural styles, case studies, architectural design techniques, formal models, specifications and architectural design tools. The laboratory sessions will expose the students to analyzing and redesigning an existing large-scale software system.
Prerequisite(s): (CIS*2420 or CIS*2520), ENGG*2100
Department(s): School of Engineering

ENGG*4460 Robotic Systems F (3-3) [0.50]
This course covers robot technology fundamentals, mathematical representation of kinematics, planning and execution of robot trajectories, introduction to robot languages, programming of robotic systems, different application domains for robots (e.g. assembly, manufacturing, medical, services, etc.), and robot sensors. The goal of this course is to provide students with a comprehensive background, approaches and skills to apply robotics technology to real world engineering applications and problems.
Prerequisite(s): ENGG*1500, ENGG*2400
Department(s): School of Engineering

ENGG*4470 Finite Element Analysis F (3-2) [0.50]
The theory of finite element analysis is presented including element derivation and solution procedures. Students use a finite element package to solve problems based on static and dynamic applications in mechanical systems. Examples are chosen from classical machines as well as biological systems.
Prerequisite(s): ENGG*2160, MATH*2130, MATH*2270
Department(s): School of Engineering

ENGG*4480 Advanced Mechatronic Systems Design W (3-3) [0.75]
The aim of this course is to build on the ideas and concepts introduced in ENGG*3490. The course covers signal conditioning, system calibration, system models, dynamic models, large scale systems, networking, microprocessors, programmable logic controllers, communication systems and fault finding.
Prerequisite(s): ENGG*3490, ENGG*3640, ENGG*4460
Department(s): School of Engineering

ENGG*4510 Assessment & Management of Risk W (3-1) [0.50]
This course will develop the bases by which risk to human health and the environment can be assessed. Issues of hazardous waste cleanups, permitting of water and air discharges, food safety, flood protection, as examples, are addressed. The course also examines how decisions are made to manage the risks to acceptable levels.
Prerequisite(s): STAT*2040 or STAT*2120
Department(s): School of Engineering

ENGG*4540 Advanced Computer Architecture W (3-2) [0.50]
This course covers topics such as: basics of pipeline structure, advanced pipelining and instruction level parallelism, multiprocessor and thread-level parallelism, memory-hierarchy design (main memory, virtual memory, caches), storage systems, interconnection networks, multiprocessor architectures (centralized and distributed). Advanced topics related to new emerging computer architectures will also be presented. The emphasis in each topic is on fundamental limitations and the trade-offs involved in designing computer systems, including memory and processing bandwidth, network bandwidth and latency, synchronization, and storage system bandwidth and latency.
Prerequisite(s): ENGG*3210, ENGG*3380
Department(s): School of Engineering

ENGG*4550 VLSI Digital Design W (3-2) [0.50]
This course introduces the students to the analysis, synthesis and design of Very Large Scale integration (VLSI) digital circuits and implementing them in silicon. The topics of this course are presented at three levels of design abstraction. At device level: MOS diode; MOS (FET) transistor; interconnect wire. At circuit level: CMOS inverter; static CMOS gates (NAND, NOR); dynamic gates (NAND, NOR); static latches and registers; dynamic latches and registers; pipelining principles and circuit styles; BICMOS logic circuits. At system level; implementation strategies for digital ICs; interconnect at system level; timing issues in digital circuits (clock structures); the adder; the multiplier; the shifter; memory design and array structure; low power design circuits and architectures.
Prerequisite(s): ENGG*2410, ENGG*2450, ENGG*3450
Department(s): School of Engineering

ENGG*4560 Embedded System Design W (3-3) [0.75]
This course introduces the basic principles of embedded system design. It utilizes advanced hardware/software abstractions to help design complex systems. Topics include: design of embedded CPUs; embedded architecture cores; system-on-chip designs and integration using processor cores and dedicated core modules; embedded computing platforms; embedded programming design and analysis; processes and operating systems; networks for embedded systems; distributed embedded architectures; design examples that target robotics, automobile, and communication systems.
Prerequisite(s): ENGG*3380 or ENGG*3640
Department(s): School of Engineering

ENGG*4580 Sustainable Energy Systems Design W (3-3) [0.75]
The analysis and design of sustainable energy systems are presented in this course. Techniques considered include generation of alternative designs to satisfy a problem definition; evaluation of alternative designs; application of modeling simulations and cost analyses.
Prerequisite(s): ENGG*3370, ENGG*3430, ENGG*4230
Restriction(s): ENGG*4310
Department(s): School of Engineering

ENGG*4650 Integrated Sensors and Photonic Devices F (3-2) [0.50]
This course presents an overview of the principles of operation of integrated solid-state sensors and sensing systems. It studies the microstructures for the measurement of visible and infrared radiation, pressure, acceleration, temperature, gas purity, and ion concentrations. Topics include transduction mechanisms, design parameters, fabrication technologies, and applications. The course will also explore the theoretical and practical aspects of current photonic devices and applications based on linear and nonlinear optics.
Prerequisite(s): CHEM*1040, ENGG*2450, PHYS*1010
Department(s): School of Engineering
**ENGG*4660 Medical Image Processing W (3-2) [0.50]**

This course covers the fundamentals of medical imaging from both the processing of digital images and the physics of image formation. Image processing topics covered include: fundamentals of resolution and quantization; linear systems as applied to multi-dimensional continuous and discrete systems including the relationship between the point spread functions and modulation transfer function; point operations such as contrast enhancement, histogram equalization, and H and D curves, geometric operations for distortion correction, including interpolation methods; linear filtering in both the spatial and spatial-frequency domains; and image restoration and inverse filtering. The physics of the following imaging modalities with emphasis on the parameters which effect image quality will be covered: x-ray radiology, MRI, ultrasound, and nuclear medicine.

Prerequisite(s): ENGG*3390  
Department(s): School of Engineering

**ENGG*4680 Multidisciplinary Engineering Design W (2-4) [0.75]**

This is a general design course for students registered in the B. Eng. major in Biomedical Engineering and who do not wish to develop a strong specialization in one of the specific areas of the program. Students work in groups to develop a general Biomedical engineering design. Special attention is paid to the sustainability of the design, its economic feasibility and overall efficiency.

Prerequisite(s): ENGG*3100  
Department(s): School of Engineering

**ENGG*4720 Physical Design Automation W (3-2) [0.50]**

This course presents the applications of a number of important optimization techniques (such as linear programming, integer programming, simulated annealing, and genetic algorithms) to various design-automation problems, including: logic partitioning, floorplanning, placement, global routing, detailed routing, compaction, and performance-driven layout.

Prerequisite(s): CIS*2500, CIS*3490, ENGG*3700  
Department(s): School of Engineering

**ENGG*4760 Biological Wastewater Treatment Design W (3-2) [0.50]**

The course applies design principles for a variety of biological treatment systems for both municipal and industrial wastewater. This involves the design of suspended growth and attached growth processes, anaerobic digestion, sludge processing and utilization, water reuse and resource recovery facilities.

Prerequisite(s): ENGG*3590  
Restriction(s): ENGG*4260  
Department(s): School of Engineering

**ENGG*4770 Physical & Chemical Water and Wastewater Treatment Design F (3-2) [0.50]**

This course focuses on the theory, application, and design principles of physical and chemical operations and processes for the treatment of water and wastewater. This involves the design of physical and chemical unit operations, and evaluating the optimum combination to satisfy the given design constraints and criteria. The optimum designs integrate engineering science, basic science, economics, and health and safety for workers and the public.

Prerequisite(s): ENGG*3590  
Restriction(s): ENGG*4260  
Department(s): School of Engineering

**ENGG*4810 Control of Atmospheric Particulates F (3-2) [0.50]**

The focus of this course is understanding, analyzing and designing conventional and innovative atmospheric particulate control systems. The properties and transport of atmospheric particulates, and the principles of cyclones, filtration and electrostatic precipitation will be taught through theory, simulations, experiments and a design project.

Prerequisite(s): 6.00 credits of ENGG courses, ENGG*2230, ENGG*2450, MATH*2130  
Restriction(s): ENGG*4330  
Department(s): School of Engineering

**ENGG*4820 Atmospheric Emission Control: Combustion Systems W (3-2) [0.50]**

Combustion systems are an essential part of our society, however, they are also the dominant source of atmospheric pollutants. This course will focus on investigation of combustion systems for the purpose of reducing atmospheric emissions.

Prerequisite(s): ENGG*2560, ENGG*3260  
Co-requisite(s): ENGG*4330  
Restriction(s): ENGG*4330  
Department(s): School of Engineering
ENGL*1080 Literatures in English I: Reading the Past F,W (3-0) [0.50]
This course is focused on the disciplinary skill of close reading and is intended for students planning to specialize in the study of English literature. Through a series of case studies, the course introduces students to a range of historical and national writings in prose, poetry, and drama, and to some of the key terms and concepts in contemporary literary studies. Lectures and discussions address selected works from the Middle Ages onwards, the periods in which these works were produced, and some of the ways in which these texts have been or could be interpreted. ENGL*1080 and its companion course, ENGL*2080, are required for a major or minor in English. Students are encouraged to enrol in ENGL*2080 in the semester after they have completed ENGL*1080. Reading- and writing-intensive course.
Equate(s): ENGL*1060
Restriction(s): Registration in the English major, minor or area of concentration, or in semesters one or two of the BA or BAS program.
Department(s): School of English and Theatre Studies

ENGL*1200 Reading the Contemporary World F,W (3-0) [0.50]
This course, which is designed primarily for those not planning a specialization in English, introduces students to literary texts and persuasive forms of writing, bringing to the fore some of the links between language and contemporary social and political issues. Course materials will represent diversity in terms of national origins, gender, race, and class. The course emphasizes the use of figurative language as well as the development of students' critical reading and writing skills. Students planning to major or minor or pursue an area of concentration in English must take ENGL*1080 and ENGL*2080, but may also take ENGL*1200 and count it as an elective lecture.
Offering(s): Also offered through Distance Education format.
Department(s): School of English and Theatre Studies

ENGL*1410 Major Writers U (3-0) [0.50]
This course, which is designed primarily for those not planning a specialization in English, offers an introduction to the study of literature through a chronological consideration of works by selected major authors from the Middle Ages to the present century, in relation to their social, intellectual and literary backgrounds. The course emphasizes the use of figurative language as well as the development of students' critical reading and writing skills. Students planning to major or minor or pursue an area of concentration in English must take ENGL*1080 and ENGL*2080, but may also take ENGL*1410.
Department(s): School of English and Theatre Studies

ENGL*2040 Latina/o Literature and Cultural Production: Intro F (3-0) [0.50]
This survey course introduces students to the terms, methodologies, and debates that form the interdisciplinary critical practice of Latina/o Studies. The course takes a pan-Latina/o approach to the study of English-language and cultural production by various Latina/o communities, particularly in U.S. regions and cities, the approach allows students to study how Latina/o literature and art have shaped the politics and culture of different regions and cities.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1 of THST*1040, ENGL*1080, ENGL*1200
Department(s): School of English and Theatre Studies

ENGL*2080 Literatures in English II: Finding a Critical Voice F,W (3-0) [0.50]
This course revisits the historical, national, and genre sweep of ENGL*1080 by conducting a range of specific, in-depth studies of particular works (including some of the texts examined in ENGL*1080) in their historical moments. Seminars help students to develop a range of critical approaches through oral presentations and essay-writing. Students are encouraged to enrol in ENGL*2080 in the semester after they have completed ENGL*1080.
Prerequisite(s): ENGL*1080
Equate(s): ENGL*2060
Department(s): School of English and Theatre Studies

ENGL*2120 Seminar: Critical Practices F,W (3-0) [0.50]
This course guides students through a range of critical approaches and explores their implications for readings of a limited number of literary texts. The seminar’s main areas of concentration are: (1) close reading, centering on the way a particular poem, work of fiction, or play works in its details and overall structure; (2) critical approaches and methodologies; (3) critical writing and discussion. (Choices of approaches and texts will be determined by individual instructors.) Writing- and presentation-intensive course.
Prerequisite(s): ENGL*1080
Restriction(s): Registration in the English major, minor or area of concentration.
Department(s): School of English and Theatre Studies

ENGL*2130 Seminar: Literature and Social Change F,W (3-0) [0.50]
This course explores the social and cultural work that literary texts perform. Seminars will illuminate such categories as gender, sexuality, nation, race, ethnicity, and class; particular ways in which they are written into a limited number of literary works; and some of the critical debates surrounding our interpretations of those processes. (Choices of approaches and texts will be determined by individual instructors.) Writing- and presentation-intensive course.
Prerequisite(s): ENGL*1080
Restriction(s): Registration in the English major, minor or area of concentration.
Department(s): School of English and Theatre Studies

ENGL*2190 Representation and Sexuality W (3-0) [0.50]
This variable-content course offers a historically grounded introduction to the critical study of sexuality and representation in literature and related media. The course may engage with a specific time-period or genre, or it may concentrate directly on the problem of theorizing sexual difference in relation to other literary and cultural forces.
Prerequisite(s): ENGL*1080
Restriction(s): Registration in the English major, minor or area of concentration.
Department(s): School of English and Theatre Studies

ENGL*2200 Postcolonial Literatures F (3-0) [0.50]
This course introduces significant issues, perspectives, and voices within the study of the postcolonial literatures in English. The course may include literature from Africa, Australia, Canada, the Caribbean, India and the Pacific. Reading-intensive course.
Prerequisite(s): 1 of ENGL*1080, ENGL*1200, ENGL*1410, WMST*1000
Department(s): School of English and Theatre Studies

ENGL*2230 Popular Genres F (3-0) [0.50]
This variable-content course introduces students to the focused study of a selected popular genre of literature, film, or other related media. The course explores the emergence and development of the popular genre chosen for that semester's study, such as science fiction, detective fiction, romance, the western, film noir, or the fairy tale; diverse critical approaches to the genre; and some meanings of the term "popular". Reading-intensive course.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1 of ENGL*1080, ENGL*1200, ENGL*1410
Department(s): School of English and Theatre Studies
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
<th>Offering(s)</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL*2550</td>
<td>North American Native Literatures W (3-0) [0.50]</td>
<td>1 of ENGL<em>1080, ENGL</em>1200, ENGL*1410</td>
<td>School of English and Theatre Studies</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*2640</td>
<td>Culture, Location, Identity: Minoritized Literatures in Canada and Beyond F (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*2740</td>
<td>Children's Literature F,W (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*2880</td>
<td>Women in Literature W (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*2920</td>
<td>Creative Writing: Fiction U (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*2940</td>
<td>Creative Writing: Poetry U (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3040</td>
<td>U.S. Latina/o Literature F (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3080</td>
<td>History of the English Language U (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3120</td>
<td>Shakespearean Receptions F (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3170</td>
<td>Elizabethan Literary Culture: Chastity and Power W (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3190</td>
<td>Poetics and Politics in Early Modern England F (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3220</td>
<td>Representing Britain: 18th- &amp; 19th- Century Literature F (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*3260</td>
<td>Writing Gender &amp; Family: 18th- and 19th- Century Literature W (3-0) [0.50]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Last Revision: March 4, 2016
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Offerings</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL*3280</td>
<td>Old English Literature U (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3300</td>
<td>Restoration to Romanticism: Forging the Nation F (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3320</td>
<td>Romanticism to Victorianism: Culture and Conformity F (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3340</td>
<td>British Imperial Culture F (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3360</td>
<td>Scottish Literary Cultures F (3-0) [0.50]</td>
<td>Also offered through Distance Education format</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3350</td>
<td>Studies in the History of Literary Production W (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3420</td>
<td>20th- &amp; 21st-Century Drama W (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English or (THST*+2010, THST*+2120)</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3460</td>
<td>Literature in London U (2-3) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3470</td>
<td>Twentieth-Century British Literature I W (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3480</td>
<td>Twentieth-Century British Literature II F (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3540</td>
<td>Writing the United States W (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3550</td>
<td>Modern United States Literatures W (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3560</td>
<td>Medieval Literature W (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3570</td>
<td>Chaucer in Context F (3-0) [0.50]</td>
<td>Offered in even-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>ENGL*3630</td>
<td>Writing Canada: Forging the Nation W (3-0) [0.50]</td>
<td>Offered in odd-numbered years.</td>
<td>1.00 credits in English.</td>
<td>School of English and Theatre Studies</td>
</tr>
</tbody>
</table>
ENGL*3670 Twentieth-Century Canadian Literature and Criticism F (3-0) [0.50]
This multigenera course examines formations of, and resistances to, ideas of national consciousness and cultural identity in Canadian literature and criticism in English from the beginnings of the twentieth century to the 1960s. Reading-intensive course.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3680 20th- & 21st-Century Canadian Literature and Criticism F (3-0) [0.50]
This course examines Canadian literature and criticism in English, since the 1960s, in relation to a variety of social, cultural, and historical contexts. Reading-intensive course.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3690 History of Literary Criticism F (3-0) [0.50]
This course introduces students to the major critics and texts formative in the development of an English critical tradition. The study will begin with Plato and Aristotle, and proceed from the Renaissance through to modernist critical theory.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3750 Studies in Postcolonial Literatures W (3-0) [0.50]
This course is a concentrated study in a major sub-area of postcolonial literature. Specific topics will vary each year, but may involve focus on a particular genre or region such as Africa, Australia, Canada, the Caribbean, India, and the Pacific. Reading-intensive course.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3760 The Atlantic World W (3-0) [0.50]
This is a variable content course aimed at considering the intercultural effects which emerge from transnational, colonial, imperial, and/or diasporic relations, through literatures in English addressing the Atlantic and contiguous lands. Texts will be selected from among the rich array of poetry, fiction, memoirs, letters, travel accounts, period histories and ethnographies, autobiographies and folkloric records that formed the literary culture of this period. Attention may be paid to diverse forms of oral and written expression, linguistic changes, the Creole continuum, representations of oceanic space, the erasure and fluidity at work in the metaphors of the sea, the evolution of national and racial stereotypes, and religious syncretism. Reading-intensive course.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3860 Topics in Literary and Cultural Studies U (3-0) [0.50]
These variable-content courses provide opportunities for topics in cross-period studies, inter- and transdisciplinary studies and cultural studies, among others that are not available in regular offerings. Consult the School for specific offerings in a given semester. Reading-intensive course.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3870 Topics in Literary and Cultural Studies U (3-0) [0.50]
These variable-content courses provide opportunities for topics in cross-period studies, inter- and transdisciplinary studies and cultural studies, among others that are not available in regular offerings. Consult the School for specific offerings in a given semester. Reading-intensive course.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3880 Topics in Literary and Cultural Studies U (3-0) [0.50]
These variable-content courses provide opportunities for topics in cross-period studies, inter- and transdisciplinary studies and cultural studies, among others that are not available in regular offerings. Consult the School for specific offerings in a given semester. Reading-intensive course.
Prerequisite(s): 1.00 credits in English.
Department(s): School of English and Theatre Studies

ENGL*3940 Seminar: Form, Genre, and Literary Value F,W (3-0) [0.50]
This seminar focuses on textual conventions such as form, style, and genre as they inform the interaction between reader and text. The impact of these conventions on the processes of literary production, reception, the production of meaning, and the assessment of literary value will be explored in relation to a limited number of literary works. (Choice of focus and texts to be determined by individual instructors.) Writing- and presentation-intensive course.
Prerequisite(s): ENGL*2080
Restriction(s): Registration in the English major, minor or area of concentration.
Department(s): School of English and Theatre Studies

ENGL*3960 Seminar: Literature in History F,W (3-0) [0.50]
This course explores the processes by which specific texts or genres emerge from particular historical moments and by which we attempt to reconstruct those historically specific connections. Seminars will focus on such topics as the archive surrounding one text, problems of period and canon, or genres and historical change. (Choice of period and texts will be determined by individual instructors.) Writing- and presentation-intensive course.
Prerequisite(s): ENGL*2080
Restriction(s): Registration in the English major, minor or area of concentration.
Department(s): School of English and Theatre Studies

ENGL*4240 Medieval & Early Modern Literatures U (3-0) [1.00]
This seminar provides the opportunity for intensive study of British literature from the beginnings to 1660. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.
Prerequisite(s): ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)
Restriction(s): ENGL*4040 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.
Department(s): School of English and Theatre Studies

ENGL*4250 18th- & 19th-C Literatures U (3-0) [1.00]
This seminar provides the opportunity for intensive study of British literature from 1660 to 1900. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.
Prerequisite(s): ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)
Restriction(s): ENGL*4050 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.
Department(s): School of English and Theatre Studies

ENGL*4270 United States Literatures U (3-0) [1.00]
This seminar provides the opportunity for intensive study of United States literatures. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.
Prerequisite(s): ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)
Restriction(s): ENGL*4070 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.
Department(s): School of English and Theatre Studies

ENGL*4280 Canadian Literatures U (3-0) [1.00]
This seminar provides the opportunity for intensive study of Canadian literatures. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.
Prerequisite(s): ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)
Restriction(s): ENGL*4080 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.
Department(s): School of English and Theatre Studies

ENGL*4310 Special Studies in English U (3-0) [1.00]
A seminar designed to provide students in semesters 7 and 8 with an opportunity to pursue studies in an area or areas of language or literature not available in other courses. The course may be taught by a visiting professor or members of the school.
Prerequisite(s): ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960)
Restriction(s): ENGL*4100, ENGL*4110 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.
Department(s): School of English and Theatre Studies
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL*4320</td>
<td>Special Studies in English</td>
<td>1.00</td>
<td>This is a seminar designed to provide students with an opportunity to pursue studies in an area or areas of language or literature not available in other courses. The course may be taught by a visiting professor or members of the school.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2080, (ENGL</em>2120 or ENGL<em>2130), (ENGL</em>3940 or ENGL*3960)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>ENGL<em>4100, ENGL</em>4110 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*4400</td>
<td>Postcolonial Literatures</td>
<td>3.00</td>
<td>This course provides the opportunity for intensive study of a representative selection of literature in English by writers from Africa, India, the Caribbean, Australia, and the Pacific. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2080, (ENGL</em>2120 or ENGL<em>2130), (ENGL</em>3940 or ENGL*3960)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>ENGL*4200 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*4410</td>
<td>Modern &amp; Contemporary Literatures</td>
<td>3.00</td>
<td>This course provides the opportunity for a study of significant works in fiction, poetry, and drama that demonstrate new approaches in form and content characteristic of 20th- and 21st-century writings in English. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2080, (ENGL</em>2120 or ENGL<em>2130), (ENGL</em>3940 or ENGL*3960)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>ENGL*4210 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*4420</td>
<td>Women's Writings</td>
<td>3.00</td>
<td>This course provides for intensive study of issues relating to the aesthetic strategies, such as those associated with structure, imagery, and language, devised by women writers to reflect women's experience and perceptions. Students are advised to complete a 3000-level lecture course in this subject area prior to enrolling in the 4000-level course.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2080, (ENGL</em>2120 or ENGL<em>2130), (ENGL</em>3940 or ENGL*3960)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>ENGL*4220 Restricted to students in the English majors, who have completed 14.00 credits with an average of 70% in all course attempts in English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*4500</td>
<td>Non-fiction Prose</td>
<td>3.00</td>
<td>This course offers an intensive study of non-fiction prose. Topics to be explored may include the roles and contexts of public and/or private writing, the role of literary criticism in reading texts sometimes marked as non-literary, the history of non-fictional prose forms, or the formal or ideological uses of the distinctions between fact and fiction.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2080, (ENGL</em>2120 or ENGL<em>2130), (ENGL</em>3940 or ENGL*3960)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>ENGL*4300 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL*4720</td>
<td>Creative Writing: Prose/Poetry</td>
<td>3.00</td>
<td>A development and extension of the creative writing/reading skills and techniques introduced in ENGL<em>2920 and ENGL</em>2940. This course will involve the generation and revision of challenging new work, sophisticated critique of the work of other students, and focused discussion of the cultural, social, and political issues in which the practice of creative writing is enmeshed. Admissions to the course are normally dependent on the successful completion of ENGL<em>2920 or ENGL</em>2940, and, following the submission of a portfolio of new work, the approval of the instructor.</td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>ENGL<em>2920 or ENGL</em>2940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>Instructor consent required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>School of English and Theatre Studies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ENGL*4810 | Directed Reading | 3.00 | This course is intended particularly as preparation for ENGL*4910. The student will design a course of readings and assignments with the instructor, whose consent must first be obtained. This option is intended only for students who have performed particularly well within the honors program. Exceptional students may take ENGL*4810 in preparation for a ENGL*4910 creative writing project, on the approval of the instructor. |
| Prerequisite(s): | ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960) | |
| Restriction(s): | Instructor consent required. | |
| Department(s): | School of English and Theatre Studies | |
| ENGL*4890 | Contemporary Literary Theory | 3.00 | This course will study the major branches of contemporary literary theory. Topics covered will include structuralism, reader-oriented theory, feminist theory, new historicist and materialist critique, postcolonialist critique, and deconstruction. |
| Prerequisite(s): | ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960) | |
| Restriction(s): | ENGL*4680 Restricted to students in the English major, who have completed 14.00 credits with an average of 70% in all course attempts in English. | |
| Department(s): | School of English and Theatre Studies | |
| ENGL*4910 | Honours English Essay | 3.00 | A major essay (approx. 25 pages) on some subject of special interest to the student is prepared and written under the direction of a faculty member. Consent of the instructor must be obtained and the subject must be approved by the School prior to the semester in which the course is to be taken. This option is intended only for students who have performed particularly well within the honours program. Exceptional students may use ENGL*4910 for creative writing, on the approval of the instructor. |
| Prerequisite(s): | ENGL*2080, (ENGL*2120 or ENGL*2130), (ENGL*3940 or ENGL*3960) | |
| Restriction(s): | Instructor consent required. | |
| Department(s): | School of English and Theatre Studies |
### ENVM*1020 Introduction to Environmental Microbiology W (2-3) [0.50]

This course will introduce the students to Environmental Microbiology. Topics of discussion will include water and wastewater systems, soils and sediments; as well as the importance of bacteria in disease, nutrition, food and food processing. Students will be introduced to various methods of environmental monitoring such as sampling and testing of public drinking water, how to monitor for cleanliness in food processing facilities as well as water ways used for recreational purposes. Student immunization records are required. See course instructor.

*Restriction(s):* Registered in B.B.R.M. Environmental Management. Instructor consent required.

*Department(s):* School of Environmental Sciences

### ENVM*3500 Environmental Management Integrated Project W (5-0) [1.00]

Students will apply the skills and knowledge gained in earlier courses to analyzing environmental processes and issues associated with an industrial, municipal, or agricultural enterprise. Students will work in teams to complete a detailed environmental report with policy recommendations and action plans.

*Prerequisite(s):* 5.00 credits

*Restriction(s):* ENVM*2500 Registered in BBRM:EM

*Department(s):* School of Environmental Sciences
Environmental Sciences
School of Environmental Sciences

Department of Food, Agricultural and Resource Economics

The program in Environmental Sciences is interdisciplinary, involving courses from several different departments. See the B.Sc.(Env.) program information in Section X—Undergraduate Degree Programs.

ENVS*1030 Introduction to Environmental Sciences F (6-0) [1.00]
This course introduces students to what it means to think critically from an environmental sciences perspective. It covers an introduction to: philosophy of science, philosophy of the environment, the evaluation of scientific evidence, and scientific arguments. The course focuses on how we understand and recognize environmental problems, how we decide what to do about them, and what role science can and should play in these discussions.

Restriction(s): ENVS*1100 Registration in the BSC(Env) program or BBRM.EM
Department(s): School of Environmental Sciences

ENVS*1060 Principles of Geology S,F,W (3-0) [0.50]
This course provides an introduction to geological principles, their historical development and application to interpreting Earth materials and processes. This course is suitable for those wishing a general knowledge of Earth sciences.

Offering(s): Offered through Distance Education format only.
Equate(s): GEOL*1100
Restriction(s): May not be taken for credit by students in BBRM, BSC or BSC(Env).
Department(s): School of Environmental Sciences

ENVS*1100 Fundamentals of Environmental Sciences F (3-0) [0.50]
This course introduces students to what it means to think critically from an environmental sciences perspective. It covers an introduction to: philosophy of science, philosophy of the environment, the evaluation of scientific evidence, and scientific arguments. The course focuses on how we understand and recognize environmental problems, how we decide what to do about them, and what role science can and should play in these discussions.

Restriction(s): ENVS*1030 Not available to students registered in BSC(Env) program and BBRM.EM
Department(s): School of Environmental Sciences

ENVS*2030 Meteorology and Climatology F (3-2) [0.50]
This course examines solar and terrestrial radiation; pressure systems and winds; atmospheric stability and vertical motions; air masses and fronts; clouds and precipitation; selected topics in applied meteorology including air pollution. The laboratory emphasizes the analysis and use of atmospheric data for solving environmental problems.

Prerequisite(s): 1 of ENVM*1120, IPS*1500, MATH*1080, MATH*1200, PHYS*1080, PHYS*1130
Equate(s): MET*2030
Department(s): School of Environmental Sciences

ENVS*2040 Plant Health and the Environment W (3-0) [0.50]
This is an interdisciplinary course on the nature and importance of diseases, insects and abiotic stresses on plant productivity and quality. A case history approach will be used to illustrate the biology of plant pests, the principles of pest population management, and related topics.

Prerequisite(s): BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)
Equate(s): ENVB*2040
Department(s): School of Environmental Sciences

ENVS*2060 Soil Science S,F (3-2) [0.50]
This course is an introduction to the principles of soil science - the origin of soils, their classification and interpretation in natural and modified environments. Soil will be studied as a product of the natural environment, with a focus on formation processes and changes which occur when it is modified through use. A variety of uses including agriculture, forestry, recreation, and urban development will be considered.

Offering(s): Also offered through Distance Education format.
Equate(s): SOIL*2010
Restriction(s): AGR*2320.
Department(s): School of Environmental Sciences

ENVS*2070 Environmental Perspectives and Human Choices F (3-0) [0.50]
This is an interdisciplinary approach to environmental issues which offers opportunities to investigate social processes and philosophical considerations with respect to the position and influence of humankind, and the development of social conditions, values and economic activities that have led to our present situation. These investigations are carried out within the context of physical environmental considerations, such as the state of the earth, forests, air water and our use of energy, and will lead the student to a detailed consideration of the future.

Offering(s): Offered through Distance Education format only.
Equate(s): UNIV*2050
Department(s): School of Environmental Sciences

ENVS*2120 Introduction to Environmental Stewardship F (3-0) [0.50]
This course provides an introduction to the concepts of resource management, environmental planning and assessment, land stewardship and sustainable development. Case studies of specific issues such as parks and natural heritage conservation, agricultural land loss, and integrated rural resources management will provide insight on approaches to decision making. Included will be discussion of the concept of stewardship as an environmental ethics.

Offering(s): Offered through Distance Education format only.
Equate(s): NRS*2120, SOIL*2120
Department(s): School of Environmental Sciences

ENVS*2130 Eating Sustainably in Ontario F,W (3-0) [0.50]
This course is intended to introduce students to the science behind food related issues within the context of Ontario agriculture and food systems. The course will provide students with an overview of the history of agriculture in Ontario and an opportunity to discuss both sides of current debates over food production and associated environmental and human health issues.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 4.00 credits
Restriction(s): May not be taken by students in the BAS, BBRM, BSC, BSC(Agr) or BSC(Env) programs.
Department(s): School of Environmental Sciences

ENVS*2210 Apiculture and Honey Bee Biology F,W (3-0) [0.50]
This course is designed to acquaint the student with the broad field of beekeeping. It will include honey bee biology and behaviour, management for honey production, products of the hive, pests and enemies and the value of bees as pollinators of agricultural crops.

Offering(s): Also offered through Distance Education format.
Equate(s): ENVB*2210
Department(s): School of Environmental Sciences

ENVS*2230 Communications in Environmental Science F,W (4-0) [0.50]
This course provides students with direct training in the academic skills used in researching and communicating environmental science. Within the context of current problems in environmental science, students will develop skills in library research, statistical interpretation, oral and poster presentation and written communication to diverse audiences. Students will research and report on scientific issues within environmental issues being reported in the media.

Prerequisite(s): 1 of ENVM*1000, ENVM*1200, ENVS*1030
Restriction(s): Registration in BBRM, BSC(Env) or BSC(Agr) programs.
Department(s): School of Environmental Sciences

ENVS*2240 Fundamentals of Environmental Geology F (2-3) [0.50]
This course introduces the concepts and real-world examples of environmental issues related to plate tectonics, natural resources and igneous, metamorphic and sedimentary processes and rocks, groundwater and structural geology. Students will develop laboratory skills in rock and mineral identification, geological map interpretation and site characterization.

Prerequisite(s): GEGO*1300
Restriction(s): ENVS*1050
Department(s): School of Environmental Sciences

ENVS*2250 Geology of Natural Disasters S,W (3-0) [0.50]
This course will offer insight into the mechanisms of natural geological disasters and their effects on Planet Earth, human civilization and life in general. Events before, during and after geological disasters such as earthquakes, volcanic eruptions, meteorite impact and climate change will be the focus of this course. This course will not count as a science credit for B.Sc. students.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 1 of ENVS*1050, ENVS*1060, GEOL*1050, GEOL*1100, GEGO*1300, GEGO*1350
Equate(s): GEOL*2250
Department(s): School of Environmental Sciences
ENVS*2270 Impacts of Climate Change F,W (3-0) [0.50]
This course will provide students with an overview of recent research into what climate change means for Canada and Canadians. Students will learn about evidence for significant changes to the Boreal forests and about the potential impacts of climate change on human health through increasing heat waves and the heat stress on individuals. The course is intended to bridge the gap between abstract discussion of the climate and understand what these changes mean at both personal and societal levels.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): Minimum of 4.00 credits
Restriction(s): May not be taken by students in the BAS, BBRM, BSC, BSC(Agr) or BSC(Env) programs
Department(s): School of Environmental Sciences

ENVS*2310 Current Issues in Earth Surface Processes F (4-0) [0.50]
This course introduces aspects of Earth science that are critical to understanding environmental issues with societal impacts. Students will gain a basic understanding of disciplines that represent different compartments of the active Earth through the study of elemental fluxes between water, air, soil and their living components. Topics of current interest, such as resource extraction, climate change and geoengineering will be discussed in terms of their contributions to major element cycles. Seminars include quantitation exercises, hands-on exercises, and discussions to complement topics covered in the lectures.

Prerequisite(s): (ENVS*1200 or ENVS*1030), CHEM*1040
Department(s): School of Environmental Sciences

ENVS*2320 Current Issues in Microbial and Molecular Science W (4-0) [0.50]
This course will introduce students to the scientific disciplines related to environmental microbiology and molecular biology, while further developing their ability to critically engage with scientific literature and apply it to interdisciplinary analysis of applied problems of current interest.

Prerequisite(s): BIOL*1090
Department(s): School of Environmental Sciences

ENVS*2330 Current Issues in Ecosystem Science and Biodiversity F (4-0) [0.50]
This course provides an introduction to a range of specific environmental and scientific issues relating to ecological sciences. Issues to be covered include the biology of climate change, forest science and management of terrestrial ecosystems. Three examples of current problems of societal concern will be used as starting points to examine the role of science in addressing them, while developing students' knowledge of the underlying science and its relation to policy and economics.

Prerequisite(s): 1 of BIOL*1050, BIOL*1070, ENVM*1000, ENVM*1200, ENVS*1030
Equate(s): ENVB*2030
Restriction(s): ENVB*3330, ENVS*2150
Department(s): School of Environmental Sciences

ENVS*2340 Current Issues in Agriculture and Landscape Mgmt W (4-0) [0.50]
This course provides an introduction to a range of specific environmental and scientific issues relating to agriculture and landscape management. Issues to be covered include land remediation, environmental impacts of food production and surface water quality. Three examples of current problems of societal concern will be used as starting points to examine the role of science in addressing them, while developing students' knowledge of the underlying science and its relation to policy and economics.

Prerequisite(s): AGR*2050 or ([BIOL*1050 or BIOL*1070], (1 of ENVM*1000, ENVM*1200, ENVS*1030, ENVS*2330))
Restriction(s): NRS*3000 Registration in BBRM, BSC(Env) or BSC(Agr) programs.
Department(s): School of Environmental Sciences

ENVS*3000 Nature Interpretation F,W (2-3) [0.50]
This course explores communication and experiential learning theories and their application to natural history interpretation and environmental education program design and delivery. Students will develop interpretive materials, plan an interpretive walk and deliver the interpretive walk to a community group.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): BIOL*2060
Equate(s): ENVB*3000
Department(s): School of Environmental Sciences

ENVS*3010 Climate Change Biology S,F (3-0) [0.50]
This course examines the impacts of climate change on living organisms, biological communities and ecosystems. The course focuses on what is known, and what is not known, about the ways in which the suite of changing climate variables influence biological systems.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): BIOL*2060
Equate(s): ENVB*3010
Department(s): School of Environmental Sciences

ENVS*3020 Pesticides and the Environment F,W (3-0) [0.50]
This course examines the role and use of pesticides by various facets of society and the effect of these pesticides on biological activities in the environment. Preparation of a research proposal is required for the course.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090), CHEM*1040
Equate(s): ENVB*3030
Department(s): School of Environmental Sciences

ENVS*3030 Conservation Field Course F (0-6) [0.50]
This course provides an opportunity for students to practice field skills in natural resource sciences. Topics will include forestry, ecological restoration, stream and wetland conservation, park and trail management, and nature conservation. Use of air photography and mapped data together with field guides will be emphasized. Guest professionals will assist with instruction on some topics, providing an opportunity for exposure to careers in this field. The course requires participation in a two week field experience held in early May, followed by field work during the summer, and a reflective evaluation in the Fall semester. This course must be recorded as part of your Fall course section and tuition and compulsory fees will be calculated accordingly. There is an extra fee to partially cover field costs.

Prerequisite(s): 9.00 credits
Equate(s): NRS*3030
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*3040 Natural Chemicals in the Environment F (3-0) [0.50]
This course explores the roles of naturally occurring chemicals in the inter-relationships of organisms, and the historical and current uses of natural chemicals by humans for agricultural and medicinal purposes.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)
Equate(s): ENVB*3040
Department(s): School of Environmental Sciences

ENVS*3050 Microclimatology W (3-0) [0.50]
This course examines natural and intentionally-modified microclimates near the earth's surface; energy budgets; transport of mass and heat. Familiarization with some instruments for microclimatic measurements will be required.

Prerequisite(s): (1 of PHYS*1000, PHYS*1070, PHYS*1080, PHYS*1130), (1 of ENVS*2020, ENVS*2030, MET*2020, MET*2030, GEOG*2110)
Equate(s): MET*3050
Department(s): School of Environmental Sciences

ENVS*3060 Groundwater W (3-0) [0.50]
This course provides a general understanding of the physical and chemical processes that operate in the groundwater zone under natural and human-induced conditions. The interrelations between the groundwater regime and the other components of the hydrological cycle are studied. Considerable emphasis is placed on the applied aspects of topics such as exploration, testing and development of aquifers for water supply, the chemical quality of groundwater, and the hydrogeological aspects of waste disposal.

Prerequisite(s): 1 of IPS*1110, MATH*1000, MATH*1080, MATH*1200 or Registration in BBRM
Equate(s): GEOL*3060
Department(s): School of Environmental Sciences
ENVS*3080 Soil and Water Conservation F (3-0) [0.50]
This course examines the processes leading to deterioration of soil and water quality, the impact of deterioration on use, and preventative or corrective measures: soil erosion by water and wind, soil compaction and salinization, drainage channel maintenance, sedimentation and nutrient enrichment of water, conservation programs and policies, and reclamation of severely disturbed soils and saline-sodic soils. Emphasis will be on concepts and solutions to problems in a systems approach.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 1 of AGR*2230, ENVS*2060, SOIL*2010
Equate(s): SOIL*3080
Department(s): School of Environmental Sciences

ENVS*3090 Insect Diversity and Biology W (3-3) [0.50]
This course is an overview of insect diversity and biology emphasizing groups of importance in conservation biology, outdoor recreation and economic entomology. Lab focus on insect identification and the development of a small insect collection.

Prerequisite(s): BIOL*1040 or (2 of BIOL*1050, BIOL*1070, BIOL*1080, BIOL*1090)
Equate(s): ENVB*3090
Department(s): School of Environmental Sciences

ENVS*3100 Internship/Externship in Environmental Sciences S,F,W (0-6) [0.50]
This is a student initiated experiential learning opportunity to be undertaken either on or off campus, and developed in consultation with the Director of the School of Environmental Sciences. Details of the proposed activities will be outlined in a learning contract initiated by the student and agreed by the Director and an appointed project advisor prior to the commencement of the work experience. The supervisor will also provide a description of the project and/or the work experience. This course is intended for experiential learning which does not fit under an academic independent study and which is not part of the co-op work term.

Prerequisite(s): 12.00 credits including (1 of ENVM*1000, ENVM*1200, ENVS*1020, ENVS*1030)
Restriction(s): Director consent required.
Department(s): School of Environmental Sciences

ENVS*3140 Management of Turfgrass Diseases F (2-2) [0.50]
In this course the ecology of turfgrass diseases and cultural methods of management will be emphasized, in addition to field recognition and microscopic diagnosis of diseases. Advances in biological and chemical control measures and their impact on turfgrass ecosystems and surrounding environments will also be discussed.

Prerequisite(s): HORT*2450
Equate(s): ENVB*1360
Restriction(s): DTM*3200
Department(s): School of Environmental Sciences

ENVS*3150 Aquatic Systems W (3-2) [0.50]
In this course students will be taught how to apply quantitative methods to the analysis of aquatic systems of the earth from many simultaneous perspectives. The material will include the physical, chemical and biological components of the various liquid surficial structures and processes and also how they interact with humans. The economic, social and policy implications of humans interacting with aquatic systems will also be emphasized. The history of the analysis of aquatic systems will be systematically included in the material.

Prerequisite(s): 10.00 credits including ( BIOL*1030, BIOL*1040 ) or (BIOL*1070, BIOL*1090), CHEM*1040
Restriction(s): BIOL*3450
Department(s): School of Environmental Sciences

ENVS*3180 Sedimentary Environments F (3-3) [0.50]
This course examines the principles of sedimentology and stratigraphy as applied to various ancient and modern sedimentary systems. Students will learn to describe and interpret sedimentary deposits in terrestrial and marine systems as well as the larger forces that control the preservation and evolution of these sedimentary systems over geological time. The course includes several field trips.

Prerequisite(s): ENVS*1050 or ENVS*2240
Restriction(s): ENVS*2400
Department(s): School of Environmental Sciences

ENVS*3210 Plant Pathology F (2-3) [0.50]
This course examines the nature of disease in plants, including their causal agents, etiology, biology, epidemiology, and management. Emphasis is placed on the historical and social importance of plant diseases, and on current issues in plant health. Each student is required to make a collection of 20 plant disease specimens. Students must contact the course instructor before starting their collection.

Prerequisite(s): 1 of BIOL*1040, BIOL*1050, BIOL*1070
Equate(s): ENVB*3210
Department(s): School of Environmental Sciences

ENVS*3220 Terrestrial Chemistry F (4-0) [0.50]
This course surveys the behaviour of elements in the Earth's surface environments, encompassing soils and saturated (wetland, lake, river) sediments. The course is focused on understanding the factors that control the chemical processes governing soils and freshwater sediments through the reactions of the elements and molecules that they contain. Students will extend their fundamental understanding of chemistry to the materials of the Earth's upper crust.

Prerequisite(s): CHEM*1050, ( 1 of ENVS*1050, ENVS*2060, ENVS*2240)
Department(s): School of Environmental Sciences

ENVS*3230 Agroforestry Systems F (2-2) [0.50]
The planned and systematic integration of trees into the agricultural landscape can potentially result in sustainable environmental, ecological, economic and social benefits. The key aspects of deriving these benefits, associated science and management considerations, application potentials at the landscape level and adoption challenges will be discussed. Common temperate and tropical agroforestry systems (e.g. intercropping of trees and crops) will be discussed. Emphasis will be given to successful research and development case studies.

Prerequisite(s): 5.00 credits, (1 of BIOL*1040, BIOL*1050, BIOL*1070)
Equate(s): ENVB*3230
Department(s): School of Environmental Sciences

ENVS*3250 Forest Health and Disease F (2-2) [0.50]
The impact of beneficial and pathogenic microorganisms on forest health, and the biology and management of tree diseases in natural and urban ecosystems is covered in this course. Emphasis will be placed on ecological processes, host-pathogen interactions, mutualistic associations, wood decay, and human impacts on tree health.

Prerequisite(s): 1 of BOT*2100, ENVB*2030, ENVS*2040, ENVS*2330
Equate(s): ENVB*3250
Department(s): School of Environmental Sciences

ENVS*3270 Forest Biodiversity W (4-0) [0.50]
This course examines biodiversity in forest ecosystems at a variety of scales from genes to landscapes. Relationships between biodiversity and forest ecosystem structure, function, and stability are explored. Approaches to conserving biodiversity in managed forests are discussed and evaluated. Analysis of the relevant scientific literature and practical experience with methods of quantifying biodiversity are emphasized in the weekly seminar.

Prerequisite(s): 1 of BIOL*2060, BOT*3050, ENVS*2330
Equate(s): ENVB*3270
Department(s): School of Environmental Sciences

ENVS*3290 Waterborne Disease Ecology F (3-2) [0.50]
This course examines emerging and re-emerging waterborne diseases (bacterial, protozoan, and viral) as a function of environmental change (including chemical and biological pollution and climate change). Waterborne diseases, in freshwater and marine ecosystems, will be examined from historical and contemporary issues as they relate to public and environmental health from regional, national, and international perspectives. Topics presented within the course will include current waterborne diseases of humans and aquatic fauna, detection of waterborne pathogens, microbial evolution, microbial physiology, water regulations and protection of drinking water.

Prerequisite(s): ENVS*2320 or [MBG*2040, (BIOL*2060 or MICR*2420)]
Equate(s): ENVB*3280
Department(s): School of Environmental Sciences

ENVS*3310 Soil Biodiversity and Ecosystem Function W (4-0) [0.50]
Soils are the site of complex interactions between minerals, water, air, organic matter and living organisms. This course will focus on the organisms that live in the soil and their activities in soil ecosystems, soil as a habitat for organisms, the key role of microorganisms in nutrient cycles and plant-microbe relationships and will review basic soil microbial and ecological principles.

Prerequisite(s): 10.00 credits including (1 of AGR*2230, ENVS*2060, SOIL*2010)
Equate(s): ENVS*3320, SOIL*3200
Department(s): School of Environmental Sciences
ENVS*3340 Use and Management of Environmental Data F (2-3) [0.50]
This course is focused on finding, collecting and interpreting data of the physical environment. Students will access various online databases, such as meteorological and hydrological time series, and perform and interpret statistical analysis with the data. Issues around calibration and data collection will be explored by performing calibrations and experiments. Students will learn to build and query a relational database with both qualitative and quantitative data.
Prerequisite(s): 1 of GEOG*2460, STAT*2040, STAT*2060
Restriction(s): ENVS*4110
Department(s): School of Environmental Sciences

ENVS*3370 Terrestrial Ecosystem Ecology W (3-0) [0.50]
In this course, the ecosystem is the biological level of organization of interest. Living organisms and their physical environment are considered as components of an integrated system. Key ecosystem processes such as energy flow, carbon and nutrient cycling, and succession, and the controls on these processes, are examined. The impacts of human activity and global change on ecosystem structure and function are investigated.
Prerequisite(s): BIOL*2060 or ENVS*2330
Department(s): School of Environmental Sciences

ENVS*3410 Independent Research I S,F,W (0-6) [0.50]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course introduces third year students to independent research. Projects may be designed to be completed in a single semester, or they may be designed to be completed over two semesters, in conjunction with ENVS*3420. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): Minimum of 10.00 credits. Minimum cumulative average of 70%
Restriction(s): ENVS*3430 Instructor consent required. Restricted to students in BBRM:EM, BSC(Env), BSC(Agr) or BSCH.
Department(s): School of Environmental Sciences

ENVS*3420 Independent Research II S,F,W (0-6) [0.50]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course introduces third year students to independent research. Projects may be a continuation of research conducted in ENVS*3410, or they may be on a separate research topic. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): Minimum of 10.00 credits. Minimum cumulative average of 70%
Restriction(s): ENVS*3430 Instructor consent required. Restricted to students in BBRM:EM, BSC(Env), BSC(Agr) or BSCH.
Department(s): School of Environmental Sciences

ENVS*3430 Independent Research S,F,W (0-12) [1.00]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course introduces third year students to independent research. This project course is designed to allow students to complete a longer, more in-depth project within a single semester. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): ENVS*3410. Minimum of 10.00 credits. Minimum cumulative average of 70%
Restriction(s): ENVS*3430 Instructor consent required. Registration in BBRM:EM, BSC(Env), BSC(Agr) or BSCH.
Department(s): School of Environmental Sciences

ENVS*3510 Independent Study I S,F,W (0-6) [0.50]
This course introduces students to independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. Projects may be designed to be completed in a single semester, or they may be designed to be completed over two semesters, in conjunction with ENVS*3520. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A School registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): Minimum of 10.00 credits. Minimum cumulative average of 70%
Restriction(s): ENVS*3530 Instructor consent required. Restricted to students in BBRM:EM, BSCH, BSC(Agr) or BSC(Env).
Department(s): School of Environmental Sciences

ENVS*3520 Independent Study II S,F,W (0-6) [0.50]
This course introduces students to independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. Projects may be a continuation of research conducted in ENVS*3510, or they may be on a separate research topic. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A School registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): ENVS*3510. Minimum cumulative average of 70%
Restriction(s): ENVS*3530 Instructor consent required. Restricted to students in BBRM:EM, BSCH, BSC(Agr) or BSC(Env).
Department(s): School of Environmental Sciences

ENVS*3530 Independent Study S,F,W (0-12) [1.00]
This course introduces students to independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. This project course is designed to allow students to complete a longer, more in-depth project within a single semester. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): Minimum of 10.00 credits. Minimum cumulative average of 70%
Restriction(s): ENVS*3510, ENVS*3520 Instructor consent required. Restricted to students in BBRM:EM, BSCH, BSC(Agr) or BSC(Env).
Department(s): School of Environmental Sciences

ENVS*4001 Project in Environmental Sciences F (3-0) [0.50]
First part of the two-semester course ENVS*4001/2. Refer to ENVS*4001/2 for course description.
Equate(s): ENVS*4011
Restriction(s): 12.00 credits, Registration in the BSC(Env) program.
Department(s): School of Environmental Sciences

ENVS*4001/2 Project in Environmental Sciences F-W (3-0) [1.00]
The course permits the student the opportunity to integrate both the skills and knowledge acquired in earlier courses through application to current environmental problems and issues. Group research problems and exposure to critical environmental policy issues will form the core elements of the course. This is a two-semester course offered over consecutive semesters. When you select it you must select ENVS*4001 in the Fall semester and ENVS*4002 in the Winter semester. A grade will not be assigned to ENVS*4001 until ENVS*4002 is completed.
Equate(s): ENVS*4011/2
Restriction(s): 12.00 credits, Registration in the BSC(Env) program.
Department(s): School of Environmental Sciences

ENVS*4002 Project in Environmental Sciences W (3-0) [0.50]
This is the second part of the two-semester course ENVS*4001/2. Refer to ENVS*4001/2 for course description.
Prerequisite(s): ENVS*4001
Equate(s): ENVS*4012
Department(s): School of Environmental Sciences

ENVS*4070 Pollinator Conservation W (3-0) [0.50]
This course will explore the ecology of pollination with an emphasis on the roles animals play in pollen movement. Students will critically examine hypothesized drivers of regional, national and global pollinator declines, and the range of potential strategies suggested to mitigate or reverse these declines. Students will examine the efficacy of a wide range of pollinator conservation strategies in different geographical, ecological and economic contexts to help them build an understanding of the available toolbox for conservation.
Prerequisite(s): BIOL*3130
Department(s): School of Environmental Sciences
ENVS*4090 Soil Management F (3-1) [0.50]
A lecture-tutorial course on the practical aspects of soil management for crop production
as they relate to the physical, chemical and biological properties of soils; major emphasis
is placed on soil fertility as related to field soil properties and fertilizer, lime and manure
use, soil and plant testing for mineral nutrients. The beneficial aspects of drainage,
irrigation, erosion control and related tillage practices on soil fertility are also presented.
Due regard is given to both economic and environmental aspects of soil management
practices.
Prerequisite(s): 1 of AGR*2301/2 , AGR*2320, ENVS*2060, SOIL*2010
Equate(s): SOIL*4090
Department(s): School of Environmental Sciences

ENVS*4110 Integrated Management of Invasive Insect Pests W (3-3) [0.50]
This course explores the concept of integrated pest management as it applies to the
mitigation of invasive insect pests associated with agricultural and forest ecosystems.
Prerequisite(s): 1 of CROP*3300, CROP*3310, ENVB*2040 , ENVB*3090
ENVS*2040, ENVS*3090, HORT*3280, HORT*3350 , HORT*3510
Equate(s): ENVB*4100
Department(s): School of Environmental Sciences

ENVS*4130 Chemical Ecology: Principles & Practice W (3-0) [0.50]
Chemicals mediate interactions between individuals of a species and between organisms
and their host plants. These interactions can be manipulated and exploited to mange pest
populations through the use of pheromones, allelochemicals and host plant resistance.
The nature of these interactions (from behavioural to evolutionary), biological and
chemical methods used in their investigation, and the application of chemical ecology
to insect pest and plant disease management will be covered.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): ENVB*3040 or ENVS*3040
Equate(s): ENVB*4130
Department(s): School of Environmental Sciences

ENVS*4160 Soil and Nutrient Management F (4-3) [0.50]
This course consists of the same lectures and seminars as (ENVS*4090 or SOIL*4090
), but with an additional laboratory. The laboratory portion will focus on the regulatory
requirements as stated under the Nutrient Management Act, 2001. Students will discuss
nutrient management issues and gain practical experience using the NMAN software
program.
Prerequisite(s): 1 of AGR*2301/2 , AGR*2320, ENVS*2060, SOIL*2010
Equate(s): SOIL*4130
Restriction(s): ENVM*1070 . (ENVS*4090 or SOIL*4090 ).
Department(s): School of Environmental Sciences

ENVS*4180 Insecticide Biological Activity and Resistance W (4-0) [0.50]
This course explores the diverse modes of action of botanical, microbial and synthetic
insecticides. Detoxification mechanisms, selectivity, resistance management and the
process of pesticide discovery and development are also considered. The course includes
a review of insect physiological systems and discussion of the stability and distribution
of pesticides in the environment.
Offering(s): Offered in even-numbered years.
Prerequisite(s): Minimum of 12.00 credits
Restriction(s): ENVB*4240 . Registration in the BAS, BBRM, BSC, BSC(Agr) or
BSC(Env) program
Department(s): School of Environmental Sciences

ENVS*4190 Biological Activity of Herbicides W (3-0) [0.50]
This course explores the diverse modes of action of botanical, microbial and synthetic
herbicides. Detoxification mechanisms, selectivity, resistance management and the
process of herbicide discovery and development are also considered. The course includes
a review of plant physiological systems and discussion of the stability and distribution of
pesticides in the environment.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): Minimum of 12.00 credits
Restriction(s): ENVB*4240 . Registration in the BAS, BBRM, BSC, BSC(Agr) or
BSC(Env) program
Department(s): School of Environmental Sciences

ENVS*4210 Meteorological and Environmental Instrumentation W (3-0) [1.00]
This course covers the design and implementation of measurement systems for atmospheric
and environmental studies. Principles of operation and practical consideration of various
meteorological and soil sensors will be discussed along with overall design and
implementation procedures for environmental monitoring. Students will propose and
perform an independent experiment or field measurement of their own design.
Prerequisite(s): 1 of ENVS*3050, ENVS*3130 , ENVS*3340, PHYS*3100
Equate(s): MET*4210
Department(s): School of Environmental Sciences

ENVS*4230 Biology of Aquatic Insects F (2-3) [0.50]
This course is a study of the adult and immature forms of aquatic insects. Students are
required to present a collection of at least 200 insect specimens identified to genus.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): ENVB*3090 or ENVS*3090
Equate(s): ENVB*4220
Department(s): School of Environmental Sciences

ENVS*4260 Field Entomology F,W (1-6) [0.50]
This course is taught in late April or May. Students may enroll in either the preceding
Winter semester or following Fall semester. The course provides an introduction to insect
sampling, observation, identification, and experimentation in field settings. Student
activities are divided equally between observing, collecting and identifying specimens
from more than 20 families and an experimental component involving one or more studies
to test hypotheses about the ecology or behaviour of insects. There are occasional lectures
and discussions to highlight particularly interesting observations of insects. Student
evaluation is based on the student's insect collection and associated logbook, a written
paper describing their experiment, contributions to class discussions and activities,
and peer evaluation. The field site is generally in the USA or South America. Course fees
cover costs of room, board, supplies, and transportation to the field site(s). This course
must be recorded as part of the student's Fall or Winter course selection and tuition and
compulsory fees will be calculated accordingly. Detailed information is available from
the Office of the Director - School of Environmental Sciences.
Prerequisite(s): ( ENVB*3090 or ENVS*3090) or ( ENVB*4040 or ENVS*4040 )
Equate(s): ENVB*4260
Restriction(s): Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*4320 Laboratory and Field Methods in Soil Biodiversity W (1-3) [1.00]
This course will use a hand-on approach to investigate concepts and develop skills needed
for understanding key soil functions. Emphasis will be on the transformation of nutrients
and contaminants in soils and groundwater by microorganisms. Approaches for analyzing
microbial populations and activities in the environment, including molecular techniques
will be covered.
Prerequisite(s): ENVS*3200 or ENVS*3310
Department(s): School of Environmental Sciences

ENVS*4350 Forest Ecology F (3-3) [0.50]
This course will explore aspects of forest ecology with an emphasis on the ecological
principles needed for sound forest management. Biotic and abiotic components of forest
ecosystems will be discussed in the context of energy flow, nutrient cycling, forest
succession and appropriate silvicultural systems.
Prerequisite(s): BIOL*2060 or ENVS*2330
Equate(s): ENVB*4780
Department(s): School of Environmental Sciences

ENVS*4360 Glacial Environments W (4-0) [0.50]
This course will explore modern to ancient glacial environments, focusing on the
sedimentary record they leave behind and applications of glacial geology including
reconstructing past environments, examining how glacial deposits affect the distribution
of resources or groundwater contaminants, and discovering the response of glaciers to
recent and past climate change. Students will develop skills in critically evaluating
literature and geological data, description and identification of glacial deposits.
Prerequisite(s): ENVS*2400 or ENVS*3180
Equate(s): ENVS*2160 , ENVS*2200
Department(s): School of Environmental Sciences

ENVS*4370 Environmental Organic Chemistry W (3-0) [0.50]
This course discusses the chemical processes that influence organic compounds in the
environment, including both anthropogenic organic compounds, such as pollutants and
pesticides, and natural organic matter, such as humic materials and biomolecules. Topics
include: the occurrence of organic contamination in the environment, emerging classes
of organic contaminants, the relationship between molecular structure and environmental
fate, persistent organic pollutants, the transformation of organic molecules in the
environment, and the origins and functionality of natural organic matter in terrestrial and
aquatic environments.
Prerequisite(s): ENVS*3220
Department(s): School of Environmental Sciences

2016-2017 Undergraduate Calendar
Last Revision: March 4, 2016
ENVS*4390 Soil Variability and Land Evaluation F (3-2) [1.00]
This course integrates formal in-field (including a two-day camp & excursions during orientation week) and laboratory training, with classroom discussions of concepts, to guide independent group projects on the gathering and interpreting of soilscape information. The principal focus is on soil, as a spatially- and temporally-variable product and component of ecosystems; special consideration is given to the factors controlling soil processes, from local to global scales. An examination of methods, for describing and quantifying the distribution of soils, includes survey and sensor-based techniques, in conjunction with data trend analysis and modeling. Students are required to notify the instructor in the preceding Winter semester of their intention to participate.
Prerequisite(s): 15.00 credits including (1 of AGR*2320, ENVS*2060, ENVS*2310, ENVS*2340, SOIL*3120, ENVS*3120, ENVS*4150, ENVS*4250, SOIL*4250, ENVS*4530). Instructor consent required. Restricted to students in the School of Environmental Sciences.
Restriction(s): ENVS*3120, ENVS*4150, ENVS*4250, SOIL*4250.
Department(s): School of Environmental Sciences

ENVS*4410 Advanced Independent Research I S,F,W (0-12) [1.00]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course is designed to provide a research intensive experience. The greater credit weighting allows the student to explore their research topic in greater depth. Projects may be designed to be completed in a single semester, or they may be designed to be completed over two semesters, in conjunction with ENVS*4420. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): (ENVS*3410, ENVS*3420) or ENVS*3430. Minimum of 15.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4430. Instructor consent required. Registration in BSC(Env), BSC(Agr), BSCH or BBRM.
Department(s): School of Environmental Sciences

ENVS*4420 Advanced Independent Research II S,F,W (0-12) [1.00]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course is designed to provide a research intensive experience. The greater credit weighting allows the student to explore their research topic in greater depth. This course may be used to extend the research completed in ENVS*4410, or it may be used to gain experience in a different research area. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): ENVS*4410. Minimum of 15.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4430. Registration in BSC(Env), BSC(Agr), BSCH or BBRM. Instructor consent required.
Department(s): School of Environmental Sciences

ENVS*4510 Advanced Independent Study I S,F,W (0-6) [0.50]
This course provides an opportunity for students to engage in advanced independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. Projects may be a continuation of research conducted in ENVS*4510, or they may be on a separate research topic. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A School registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): (1 of ENVS*3510, ENVS*3520, ENVS*3530). Minimum of 14.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4530. Instructor consent required. Restricted to students in the BBRM.EM, BSCH, BSC(Agr), BSC(Env).
Department(s): School of Environmental Sciences

ENVS*4520 Advanced Independent Study II S,F,W (0-6) [0.50]
This course provides an opportunity for students to engage in advanced independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. Projects may be a continuation of research conducted in ENVS*4510, or they may be on a separate research topic. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A School registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): ENVS*4510. Minimum of 14.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4530. Instructor consent required. Restricted to students in the BBRM.EM, BSCH, BSC(Agr), BSC(Env).
Department(s): School of Environmental Sciences

ENVS*4530 Advanced Independent Study S,F,W (0-12) [1.00]
This course provides an opportunity for students to engage in advanced independent research and study. Students will undertake a project based on research in the literature that relates to environmental sciences. This project course is designed to provide an intensive study experience that is completed in a single semester. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A School registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): (1 of ENVS*3510, ENVS*3520, ENVS*3530). Minimum of 14.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4510, ENVS*4520. Instructor consent required. Restricted to students in the BBRM.EM, BSCH, BSC(Agr), BSC(Env).
Department(s): School of Environmental Sciences

ENVS*4540 Advanced Independent Study F (0-24) [2.00]
In this course the student will undertake an independent research project of a practical or theoretical nature that relates to environmental sciences and is conducted under the supervision of a faculty member. This course is designed to provide a research intensive experience that is completed in a single semester. Students must make arrangements with both a faculty supervisor and the course coordinator at least one semester in advance. A school registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the course is taken.
Prerequisite(s): (ENVS*3410, ENVS*3420) or ENVS*3430. Minimum of 15.00 credits. Minimum cumulative average of 70%.
Restriction(s): ENVS*4410, ENVS*4420. Instructor consent required. Registration in BSC(Env), BSC(Agr), BSCH or BBRM.
Department(s): School of Environmental Sciences
Equine

Ontario Agricultural College, Department of Animal Biosciences

**EQN*1040 Equine Anatomy and Physiology F (3-3) [0.50]**
This course examines the gross anatomy and physiology of the horse. All the major body organs will be studied in relation to their function in the equine. Comparative analysis will be made to other domestic farm animals.
Prerequisite(s): BIOL*1040 or BIOL*1050
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*2060 Equine Event Management I F (1-3) [0.50]**
This course will introduce skills required to organize equine events, such as horse shows and clinics. Major topics include event planning, and managing event staff and volunteers. Required activities outside of regularly scheduled class hours will be assigned. Students will assist in the planning and staging of equine events either on or off campus.
Prerequisite(s): EQN*1010
Restriction(s): EQN*1060 Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*2070 Equine Event Management II W (1-3) [0.50]**
This course will further develop the skills required to organize equine events, such as horse shows and clinics. Major topics include regional impact, marketing and budgeting. Required activities outside of regularly scheduled class hours will be assigned. Students will assist in the planning and staging of equine events either on or off campus.
Prerequisite(s): EQN*2060
Restriction(s): EQN*1070 Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*2150 Equine Facility Management and Design W (3-2) [0.50]**
This course introduces students to the design, development and management of an equine facility. Aspects of the building, renovating and management of horse facilities including site planning and interior design are presented. Special consideration is given to environmental control, waste management and environmental stewardship. Management topics include theoretical and practical skills, interacting with people, recruiting, supervising, motivating, training employees, effective listening, dealing with difficult people, group dynamics and leadership.
Restriction(s): AGR*2100, EQN*1050, EQN*2020 Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*2200 Equine Industry Trends and Issues I F (3-0) [0.50]**
This course discusses selected current global, national and regional issues in the horse industry. Analysis of strengths, weaknesses, opportunities and threats are applied to controversial issues such as industry certification and transportation legislation and enforcement.
Prerequisite(s): EQN*1010
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*2500 Equine Field Course F (0-4) [0.50]**
In this 10-day field course, students will tour a selected area, visiting premier equine educational and industry locations managed by elite professionals. Students are exposed to a broad, high caliber learning experience from a variety of industry operations, providing a catalyst for future courses in the BBRM degree program. An additional fee will be assessed per student to cover the cost of transportation and accommodation. This course must be recorded as part of your Fall course selection and tuition and compulsory fees will be calculated accordingly. Contact course instructor during the preceding March course selection period.
Prerequisite(s): EQN*1050 or EQN*2150
Restriction(s): Registration in BBRM.EQM. Instructor consent required.
Department(s): Department of Animal Biosciences

**EQN*3050 Equine Exercise Physiology W (3-0) [0.50]**
This course considers the conversion of absorbed nutrients into metabolic fuels and the use of these substrates for work and heat production in horses. This knowledge is used as a basis for the understanding of the training and performance of horses used for competitive purposes.
Prerequisite(s): ANSC*3080 or (EQN*2040, EQN*2050)
Department(s): Department of Animal Biosciences
Location(s): Guelph

**EQN*3060 Equine Reproduction W (3-3) [0.50]**
Students will develop a solid foundation in reproductive endocrinology and physiology in the stallion and mare, emphasis on physiology, breeding management and recognition of common reproductive problems in stallion, mare or foal. Practical experience includes dissection of reproductive tracts, semen collection and evaluation.
Prerequisite(s): BIOL*1090, EQN*2040
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*3070 Equine Health Management W (3-3) [0.50]**
This course asks the equine student to apply principles of management to knowledge of the equine industry, equine facility design, biological systems and equine anatomy and physiology. The role of management in the optimization of the health of the horse is critical to success in the industry. Fundamental principles of horse health will be introduced including important indicators of individual and herd health, record keeping and the role of management in disease causation. Application of current, scientifically based management principles and techniques will ask the student to develop both proactive and reactive decision making skills in the context of equine health management.
Prerequisite(s): EQN*2040
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*3500 Equine Integrated Project W (1-6) [1.00]**
This course facilitates education, communication and an exchange of ideas between students and equine businesses to enhance the development of the equine industry and its leaders. Student teams compile information on a real-life equine enterprise, including purpose, production, financial, marketing and business management data. Following an extensive evaluation of the enterprise, teams develop a comprehensive review and provide recommendations for improving or increasing the business productivity. Team members present recommendations to a panel of industry experts.
Prerequisite(s): 7.50 credits
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences

**EQN*4020 Feeding the Performance Horse W (3-0) [0.50]**
This course focuses on the nutrition of horses at peak levels of performance or endurance. The use of real-world, case-study scenarios allows for the evaluation of practical feeding programs across a range of equine performance situations.
Prerequisite(s): EQN*3050 or NUTR*3210
Department(s): Department of Animal Biosciences
Location(s): Guelph

**EQN*4400 Equine Industry Trends and Issues II W (3-0) [0.50]**
This seminar course integrates discussion on selected current global, national and regional issues in the equine industry, building upon knowledge gained in earlier courses. Current issues in the equine industry will be examined through debate and discussion.
Prerequisite(s): 16.00 credits including EQN*2200
Restriction(s): Registration in BBRM.EQM
Department(s): Department of Animal Biosciences
Location(s): Guelph
### European Studies

**EURO*1100 European Film F (4-0) [0.50]**

This course will examine European films in a socio-political context. It will focus on the interaction between aesthetic and narrative choices, and the political and cultural conditions in Europe. The topics to be discussed in the course will centre on major developments in European film, such as Italian Neorealism and the French New Wave, film genre, the representation of gender, national and ethnic identity, European versus Hollywood filmmaking, national and transnational cinema.

*Department(s):* School of Languages and Literatures

**EURO*1200 European Culture from the Mid 18th to the Mid 19th Century W (4-0) [0.50]**

This course explores major trends in European Culture in the context of political and social events. Focus will be on major developments in politics (e.g. the French Revolution, the birth of nationalism), philosophy (e.g. enlightenment, idealism), arts and letters (e.g. classicism, romanticism).

*Prerequisite(s):* EURO*1200 is recommended

*Restriction(s):* EURO*2000

*Department(s):* School of Languages and Literatures

**EURO*2200 European Culture from the Mid 19th Century to the 1920's F (3-0) [0.50]**

This course explores major trends in European culture in the context of political and social events. Topics studied include major political events and their significance for culture (e.g. bourgeois liberalism, revolts in the mid 19th century, World War I and its aftermath), thinkers who have shaped the 20th century (e.g. Nietzsche, Freud), avant-garde movements and innovation in the arts and letters (e.g. impressionism, futurism, expressionism, surrealism).

*Prerequisite(s):* EURO*1200 is recommended

*Restriction(s):* EURO*1020

*Department(s):* School of Languages and Literatures

**EURO*3300 Before the Fall of the Berlin Wall W (3-0) [0.50]**

This course explores major trends in European culture in the context of political and social events. The focus will be on political events and their significance for culture (e.g. fascism, World War II and the Holocaust and their effects in the second half of the 20th century, the political reorganization of Europe, protest movements, the social and political events that led to the fall of the Berlin Wall), new trends in thought (e.g. existentialism, structuralism, post-modernism, feminism) and the arts and letters (e.g. neorealism, epic theatre, new wave cinema).

*Prerequisite(s):* 7.50 credits. EURO*1200 and EURO*2200 are recommended

*Restriction(s):* School of Languages and Literatures

**EURO*3700 Experiential Learning and Language S,F,W (0-0) [0.50]**

This course provides an opportunity for independent study based on an experiential project in European Studies. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.

*Prerequisite(s):* 10.00 credits including 1.50 credits in European Studies.

*Restriction(s):* A minimum cumulative average of 70% in all European Studies course attempts. Instructor consent required.

*Department(s):* School of Languages and Literatures

**EURO*4050 Contemporary Europe. New Landscapes in the Post-Cold War Europe W (3-0) [0.50]**

This course examines the major trends and developments in European culture and society since the end of the Cold War and the post-1989 geo-political, social and cultural events. The course will focus on literature, film, art, political and economic theory and will address Europe’s transcontinental relationships, inter-European immigration, the role of religious and cultural minorities, the impact of the financial crisis on the Eurozone and its repercussions on the social and cultural life of Europeans.

*Prerequisite(s):* 10.00 credits, EURO*1200, EURO*2000, EURO*3300 are recommended

*Department(s):* School of Languages and Literatures

**EURO*4600 Honours Seminar in European Studies W (3-0) [0.50]**

A seminar course designed to explore one or more topics of European culture, history and/or business, depending on the expertise of the instructor. Students should consult the Coordinator of European Studies for specific offerings.

*Prerequisite(s):* 10.00 credits, (2 of ARTH*1520, EURO*1050, EURO*1200, EURO*2200, EURO*2300, HIST*2510, HIST*3090, MUSC*1060, POLS*3450)

*Department(s):* School of Languages and Literatures
**External Courses**

All courses labeled XSEN*XXXX are Seneca College Courses. The corresponding Seneca Course numbers are provided. Detailed course profiles can be accessed through the Seneca College home page at http://www.senecac.on.ca/. All XSEN*XXXX courses are limited to students B.Sc. Biological and Pharmaceutical Chemistry.

### XSEN*3030 Pharmacology and Applied Toxicology W (3-3) [0.50]

This subject is an introduction to the general aspects of pharmacology and toxicology. The lecture topics will cover the pharmacological activity of drugs on the autonomic nervous system, central nervous system and the cardiovascular system. The laboratory practices will focus on testing, drug screening, and clinical trial methodology. This course is taught at Seneca College.

**Prerequisite(s):** BIOC*2580, CHEM*2400  
**Restriction(s):** Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #PHT-533  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3040 Occupational Health and Chemistry W (2-3) [0.50]

A general coverage of general aspects of industrial hygiene. Specific topics include Canadian legislation with respect to Occupational Safety, modes of evaluation of chemical exposure, occupational toxicology, and instrumentation associated with the evaluation of the occupational environment. This course is taught at Seneca College.

**Prerequisite(s):** CHEM*2700  
**Restriction(s):** Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #OCC-433  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3060 Pharmaceutical Analysis - Advanced W (2-3) [0.50]

This course reinforces the concept of how the pharmaceutical laboratory works by focusing on method validation requirements within the pharmaceutical industry. It introduces students to the regulatory (ICH, FDA) requirements and guidelines for systems validation, including TPP-acceptable methods and GMP regulations. Validation methods that are taught include Related Substances, Assay, Dissolution and Cleaning. Critical validation parameters (e.g., linearity, specificity, limit of quantitation, etc.) are focused on as well as validation protocols including establishing specifications and dealing with exceptions or out-of-specification (OOS) results. Process validation characteristics (i.e., Design Qualification (DQ), Installation Qualification (IQ), Operation Qualification (OQ), Performance Qualification(PQ) or System Suitability) are also emphasized as well as “Best Practices” such as Process Capabilities and Annual Product Review. This course is taught at Seneca College.

**Prerequisite(s):** BIOC*2580, CHEM*2400  
**Restriction(s):** Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #PHA-533  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3070 Pharmaceutical Product Formulations W (2-3) [0.50]

This subject deals with the theoretical and practical aspects of pharmaceutical product formulation with an emphasis on semi-solid and liquid formulations. The students prepare and test ointments, creams, lotions, and syrups in the laboratory. Formulation as it relates to overall product stability and efficacy is also covered in both theoretical and practical terms. This course is taught at Seneca College.

**Prerequisite(s):** CHEM*3750  
**Restriction(s):** XSEN*4030 , Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #PPF-633  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3090 Biopharmaceuticals W (3-0) [0.50]

This subject introduces the student to the rapidly developing field of biotechnology and biopharmaceuticals. Techniques used in the development of biopharmaceuticals will be emphasized as well as large-scale production of biologics manufactured by genetic engineering processes. This course is taught at Seneca College.

**Prerequisite(s):** BIOC*2580, CHEM*2700  
**Restriction(s):** XSEN*4050 , Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #BPH-633  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3200 Pharmaceutical Organic Chemistry W (1-3) [0.50]

The determination of the structure of organic compounds using spectroscopic methods such as N.M.R. and mass spectroscopy are discussed. Correlation of structure and reactivity (i.e. drug activity) of organic compounds is also explored. A multi-step synthesis of an anesthetic (lidocaine) and mass-spectrometric analysis of an unknown organic compound (or mixture) are examples of lab-projects. This course is taught at Seneca College.

**Prerequisite(s):** CHEM*3750  
**Restriction(s):** XSEN*4020 , Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #PAC-633  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

### XSEN*3210 Introduction to Pharmaceutical Manufacturing W (2-3) [0.50]

This laboratory oriented course is intended to introduce students to the world of pharmaceutical analysis and manufacturing. Certain select physical and chemical techniques used in the control of raw materials and finished dosage forms are emphasized. Topics will include the methods and equipment required to produce solid dosages.

**Prerequisite(s):** CHEM*2700  
**Restriction(s):** Restricted to BSCH.BPCH and BSCH.BPCH:C  
**External Course Code(s):** Seneca #IPM-472  
**Department(s):** Department of Chemistry, Dean's Office, College of Physical and Engineering Science

---

Last Revision: March 4, 2016
### Family Relations and Human Development

**Department of Family Relations and Applied Nutrition.**

These courses support two majors offered by the Department of Family Relations and Applied Nutrition: Adult Development, and Child, Youth, and Family.  

---

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRHD*1010</td>
<td>Human Development W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course is an introduction to the study of the development of the individual throughout the life cycle. Emphasis will be placed on the interrelationships between physiological, sociological and psychological aspects of normal human development. Offering(s): Also offered through Distance Education format. Restriction(s): Not available to Child, Youth &amp; Family or Child, Youth &amp; Family Co-op majors. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*1020</td>
<td>Couple and Family Relations W (3-0) [0.50]</td>
<td>4.50</td>
<td>A survey of family dynamics throughout the life course, emphasizing themes of power, intimacy and family diversity. Topics may include: gender socialization, sexuality, mate selection, communication, abuse, couple interaction, parent-child relations, divorce, remarriage. Offering(s): Also offered through Distance Education format. Equivalent(s): FRHD*2010 Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*1100</td>
<td>Life: Health and Well-Being F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course integrates the theory, application and research of various aspects of health-related topics across the lifespan, emphasizing relevance to the lives of young adults. Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2040</td>
<td>Principles of Program Design for Children W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course will examine the elements involved in planning and implementing quality play-based programs for young children. Some of the issues include: the role of the teacher, meeting developmental needs, the materials and the organization of the environment, and instructional strategies. The course will involve a workshop component. Prerequisite(s): FRHD<em>2270 or PSYC</em>2450 Restriction(s): Restricted to students in B.A.Sc. Program (CYF, CYF:C majors). Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2060</td>
<td>Adult Development and Aging F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course provides an overview of major theoretical approaches, research issues and methodologies, and significant research findings which relate to adult development and aging. Prerequisite(s): 1 of ANTH<em>1150, FRHD</em>1010, FRHD<em>1100, PSYC</em>1100, PSYC<em>1200, SOC</em>1100 Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2100</td>
<td>Development of Human Sexuality F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course covers a social scientific analysis of human sexuality. Emphasis will be placed on the development of sexuality within an interpersonal context. Offering(s): Also offered through Distance Education format. Prerequisite(s): 4.50 credits Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2110</td>
<td>Exceptional Children and Youth F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course provides an overview of childhood exceptionalities including intellectual differences, communication disorders, sensory impairments, developmental and behavioural disorders, and health problems. Issues faced by the exceptional child as well as the parents and siblings are discussed. Offering(s): Also offered through Distance Education format. Prerequisite(s): FRHD<em>2060, FRHD</em>2260, FRHD<em>2280, FRHD</em>2270 or PSYC*2450) Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2260</td>
<td>Infant Development W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course is an examination of developmental principles and milestones characterizing infant development from conception to 24 months. Emphasis will be placed on understanding the nature of the reciprocal family-infant interactions during this period, and on the societal context influencing those interactions. Offering(s): Also offered through Distance Education format. Prerequisite(s): 1 of ANTH<em>1150, FRHD</em>1010, FRHD<em>1100, PSYC</em>1100, PSYC<em>1200, SOC</em>1100 Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2270</td>
<td>Development in Early and Middle Childhood F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course is an examination of development in the early and middle childhood years, with emphasis on family and societal contexts. Prerequisite(s): 1 of ANTH<em>1150, FRHD</em>1010, FRHD<em>1100, PSYC</em>1100, PSYC<em>1100, SOC</em>1100 Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2280</td>
<td>Adolescent Development W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course examines psychosocial development in adolescence, emphasizing physiological, social and emotional changes. Offering(s): Also offered through Distance Education format. Prerequisite(s): 1 of ANTH<em>1150, FRHD</em>1010, FRHD<em>1100, PSYC</em>1100, PSYC<em>1200, SOC</em>1100 Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2300</td>
<td>Principles of Program Design for Youth W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course will examine the elements involved in planning and implementing effective preventive education, and support programs for youth and their families. Programs include alternative education, independent living, community justice initiatives, sexual health, and physical education and nutrition strategies. Major topics covered in this course include: the roles of organizations and child and youth counsellors; empowerment of youth, their families and communities; working with diverse populations; needs assessments; program planning and service delivery; and program evaluation. Case studies of innovative programs are highlighted. Prerequisite(s): FRHD<em>2280, (1 of FRHD</em>2060, FRHD<em>2270, PSYC</em>2450) Restriction(s): Restricted to students in B.A.Sc. CYF and CYF:C. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*2350</td>
<td>Principles of Program Design in the Human Services W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course will examine the elements involved in planning and implementing effective preventive education, and support programs for various populations in community settings. Programs include health promotion, sexual health, and support programs for new parents, new Canadians, seniors, caregivers, and individuals with disabilities. Major topics covered in this course include: the roles of organizations and human service professionals; empowerment within individuals, families and communities; working with diverse populations; needs assessments; program planning and service delivery; and program evaluation. Case studies of innovative programs are highlighted. Prerequisite(s): 4.50 credits including FRHD*1100 Restriction(s): Restricted to students in B.A.Sc. ADFW, ADFW:C, ADEV, ADEV:C. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*3040</td>
<td>Parenting and Intergenerational Relationships W (3-0) [0.50]</td>
<td>4.50</td>
<td>This course is a study of research concerning parent-child relationships across the lifespan. Prerequisite(s): 9.50 credits including FRHD<em>1020, (1 of FRHD</em>1100, FRHD<em>2060, FRHD</em>2270, FRHD<em>2280, PSYC</em>2450) Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*3060</td>
<td>Principles of Social Gerontology F (3-0) [0.50]</td>
<td>4.50</td>
<td>A study of social and health aspects of individual and population aging, including theories and implications for understanding and working with the elderly. Prerequisite(s): 9.50 credits including (FRHD<em>1020 or SOAN</em>3100) Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*3070</td>
<td>Research Methods: Family Studies F (3-0) [0.50]</td>
<td>4.50</td>
<td>This course is a critical examination of research methods in family studies. Prerequisite(s): 4.50 credits Restriction(s): Restricted to students in B.A.Sc. Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
<tr>
<td>FRHD*3090</td>
<td>Poverty and Health W (3-0) [0.50]</td>
<td>9.50</td>
<td>This course offers an in-depth examination of the factors associated with poverty across the lifespan, with a focus on the relationships between poverty and health and development. Poverty within vulnerable groups, issues concerning inequality and strategies to address poverty will also be explored. Offering(s): Offered in odd-numbered years. Prerequisite(s): 9.50 credits including (FRHD<em>1010 or FRHD</em>1100) Department(s): Department of Family Relations and Applied Nutrition</td>
</tr>
</tbody>
</table>
FRHD*3150 Strategies for Behaviour Change W (3-0) [0.50]

This course will review the nature and use of behaviour change strategies commonly used in interventions with children, youth, and their families.

Prerequisite(s): 2 of FRHD*1010, FRHD*2060, FRHD*2260, (FRHD*2270 or PSYC*2450), FRHD*2280

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see departmental website for more information.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3180 Observation and Assessment Laboratory F (2-1) [0.50]

Direct observation as a strategy for collecting information on children's behaviour in applied and research settings is the focus of this laboratory course. Emphasis will be placed on theory, recording and interpreting observational data and communicating findings in written reports.

Prerequisite(s): (FRHD*2040 or FRHD*2300), FRHD*2110

Co-requisite(s): FRHD*3200 or FRHD*3250

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3190 Administration of Programs for Children W (3-0) [0.50]

This course examines the roles and responsibilities of administrators in programs for children with emphasis on the development of appropriate policies and procedures; management of human and financial resources; and internal and external communication within the context of multidisciplinary settings. Attention will be given to quality assurance, professional ethics, and continuing professional development.

Offering(s): Offered through Distance Education format only. Offered in even-numbered years.

Prerequisite(s): 7.00 credits including (1 of FRHD*2260, FRHD*2270, PSYC*2450)

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3200 Practicum - Child F,W (2-10) [1.00]

This practicum provides students with a seminar and supervised experience with children and is designed to demonstrate the application of theory studied earlier in the program. It will also provide opportunities for working directly with young people while examining such topics as the role of the teacher, teacher-child interaction, and program implementation. Students wishing to enrol in this course must consult with the instructor during course selection.

Prerequisite(s): FRHD*1020, FRHD*2040, NUTR*1010

Equivalent(s): CSTU*3170, FRHD*3170

Restriction(s): Registration in the B.A.Sc. program (Child, Youth and Family Child, Youth and Family Co-op majors). Instructor consent required.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3250 Practicum in Youth F (3-12) [1.00]

Through seminar and supervised experience with youth, students will demonstrate the application of theory studied earlier in the program. This practicum course will also provide opportunities for working directly with youth in a community setting while examining the role of the professionals involved and the communication with youth and community members. Developing skills in programming planning, implementation, and evaluation is a primary objective. Students wishing to enrol in this course must consult with the instructor during course selection.

Prerequisite(s): FRHD*1020, NUTR*1010, FRHD*2300

Restriction(s): Registration in the B.A.Sc. program (Child, Youth and Family Child, Youth and Family Co-op majors). Instructor consent required.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3290 Practicum I: Adult Development F,W (3-12) [1.00]

This course offers students an opportunity to participate in seminar and supervised field placement in health and social service agencies. The practicum and seminar will develop students' helping roles in agencies and facilitate the integration and application of theoretical knowledge from previous course work with practice. It will also provide opportunities for students to work directly with individuals and/or groups and to participate in ongoing programs or services. Students wishing to enrol in this course must consult with the instructor during the course selection period.

Prerequisite(s): FRHD*2350, FRHD*3400

Restriction(s): Restricted to students in B.A.Sc. ADEV, ADEV:V.C, ADFW, ADFW:V.C

Instructor consent required.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*3400 Communication and Counselling Skills F,W (3-0) [0.50]

This course is an examination and analysis of the theories and methods of communication as applied within the processes of family counseling and consultation.

Prerequisite(s): 4.50 credits including (FRHD*1020 or FRHD*1100)

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see departmental website for more information.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4020 Family Theory W (3-0) [0.50]

This course analyses theoretical approaches and concepts in the study of the family.

Prerequisite(s): 12.50 credits including FRHD*1020

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see departmental website for more information.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4070 Topics in Family Relations and Human Development U (3-0) [0.50]

Lecture-discussion or seminar on a selected topic in family studies. To be conducted by regular or visiting faculty with expertise in the area. Students should check with the Department of Family Relations and Applied Nutrition to determine what topic will be offered during specific semesters and which prerequisites, if any, are appropriate.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4080 Topics in Family Relations and Human Development U (3-0) [0.50]

Lecture-discussion or seminar on a selected topic in family studies. To be conducted by regular or visiting faculty with expertise in the area. Students should check with the Department of Family Relations and Applied Nutrition to determine what topic will be offered during specific semesters and which prerequisites, if any, are appropriate.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4170 Practicum - Child, Youth and Family F,W (3-16) [1.00]

Seminar and experience with children in an appropriate field setting to be assigned by the department. Emphasis will be upon developing, implementing and evaluating program plans for children in educational and community settings. Students will acquire communication and interactive skills with children and adults. Students wishing to enrol in the course must consult with the course instructor during the course selection period.

Prerequisite(s): 1 of FRHD*3170, FRHD*3200, FRHD*3250

Restriction(s): Instructor consent required.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4180 Assessment and Intervention F (2-2) [0.50]

Principles and theories of assessment and evaluation as related to the child, the family, and to child oriented intervention, education and social service programs are examined in this course.

Prerequisite(s): 12.00 credits including FRHD*2110, FRHD*3070

Co-requisite(s): FRHD*3180

Restriction(s): Registration in the B.A.Sc. program (Child, Youth and Family or Child, Youth and Family Co-op majors).

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4190 Assessment in Gerontology F (2-2) [0.50]

This course provides an examination and critique of current methods of assessing older adults. Tools to be considered include those for assessing dementia, depression, and pain. Students will examine diagnostic criteria that form the underpinnings of most tests and then examine each test for its psychometric properties and appropriate use. An understanding of the ethical principles governing assessment will be gained.

Prerequisite(s): FRHD*2060

Restriction(s): Semester 7 and above.

Department(s): Department of Family Relations and Applied Nutrition

FRHD*4200 Issues in Human Sexuality W (3-0) [0.50]

An advanced analysis of sexual development. Specific attention will be given to sexual problems, and the concepts, methods and issues associated with sex education and counselling.

Prerequisite(s): FRHD*1020, FRHD*2100 and 1.00 credit at the 3000 level in Family and Social Relations, Psychology or Sociology

Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods.

Department(s): Department of Family Relations and Applied Nutrition
FRHD*4210 Senior Seminar in Early Education and Care F (3-0) [0.50]
The course offers a study of the historical and philosophical basis of programs for young
children evaluated from a developmental perspective. Emphasis will be on current
approaches and programs and contemporary issues in early childhood programming.
Prerequisite(s): FRHD*3200
Equate(s): CSTU*4210
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4250 Aging and Health W (3-0) [0.50]
This course offers upper level undergraduates a forum to explore issues related to aging
and health across the adult life span. More specifically, the conceptual groundwork
necessary for understanding the roles of the life span developmental perspective, individual
development, physiological changes in human aging, contextual influences and
interactions, and several models/theories of aging and health will be examined. A primary
objective of the course is the integration of models and theory to facilitate understanding
of aging and health topics. Topics include but are not limited to: age changes and disease
processes (both acute and chronic); mental health and illnesses; medication use; disease
prevention and health promotion; influence of health on family relationships, caregiving,
and placement decisions; systemic and societal influences on health; and ethical issues
and controversies surrounding the end-of-life care and decision making, advanced
directives, assisted suicide, and death and dying.
Prerequisite(s): 10.00 credits including FRHD*2060
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4260 Social Policy and Gerontology W (3-0) [0.50]
This course examines aging and adult development in relation to social policy with special
reference to families.
Prerequisite(s): FRHD*2060
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to
particular programs or specializations or semester levels during certain
periods. Please see departmental website for more information.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4290 Practicum II: Adult Development F,W (3-16) [1.00]
This course enables students to extend their knowledge and professional skills in a second
supervised placement in a health or social service agency. The practicum and seminar
provides students with additional opportunities to integrate theoretical knowledge with
practice experiences. Students are expected to assume additional responsibilities related
to program design and implementation and in their supervised work with individuals
and/or groups. Students wishing to enrol in this course must consult with the instructor
during the course selection period.
Prerequisite(s): FRHD*3290
Restriction(s): Restricted to students in B.A.Sc. ADEV, ADEV:C, ADFW, ADFW:C.
Instructor consent required.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4310 Professional Issues F (3-0) [0.50]
This course examines ethical and professional issues in working with children, youth,
adults of all ages, and their families. A variety of institutional settings are considered
(e.g., school systems, treatment agencies, youth residential programs, senior care facilities,
hospitals). The complexities of professional practice with diverse populations are explored
in depth. Professional communication skills and relevant legal aspects are also addressed.
Prerequisite(s): 12.00 credits including FRHD*3400
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to
particular programs or specializations or semester levels during certain
periods. Please see departmental website for more information.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4320 Social Policies for Children, Youth and Families W (3-0) [0.50]
This course focuses on current social policies, programs, and services that affect children's
development and family well-being. Issues include policies that affect income security,
parental effectiveness, social service provision, and community resources.
Prerequisite(s): 9.50 credits
Co-requisite(s): FRHD*3040
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to
particular programs or specializations or semester levels during certain
periods. Please see departmental website for more information.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4400 Youth, Risk and Resilience W (3-0) [0.50]
This course examines biological, and social-contextual aspects of developmental issues
evident in childhood and adolescence. The theoretical perspective of developmental
psychopathology will be used to examine literatures relating to risk, resilience,
developmental trajectories, classification, assessment, and intervention. Students will
have a chance to critically examine many mental health issues commonly found in
childhood and adolescence.
Prerequisite(s): 15 credits including FRHD*2110, FRHD*2280
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4810 Thesis I U (3-0) [0.50]
Planning, developing and writing a research proposal under individual faculty supervision.
Topic to be decided by the student in consultation with the supervisory faculty member
before she/he may course select or register for the course. Students are advised to contact
the Department of Family Relations and Applied Nutrition for further information.
Prerequisite(s): FRHD*3070
Equate(s): CSTU*4810
Restriction(s): Instructor consent required.
Department(s): Department of Family Relations and Applied Nutrition

FRHD*4910 Thesis II U (6-0) [1.00]
The student will conduct and write an undergraduate thesis under the direction of a faculty
member.
Prerequisite(s): FRHD*4810
Equate(s): FRHD*4911/2
Department(s): Department of Family Relations and Applied Nutrition
# Food, Agricultural and Resource Economics

**Department of Food, Agricultural and Resource Economics**

### FARE*1040 Intro to Environmental Economics, Law & Policy W (5-0) [1.00]
This course introduces students to a social science and policy perspective on environmental issues. The course emphasizes interactions among market exchange relationships, policy actions and legal rules and institutions. The role of scientific evidence in the resolution of environmental disputes is considered. Students participate in exercises representing different roles in environmental litigation.

**Restrictions:** ECON*1050 Registration in BBRM.EM, BSES, BSES.C.
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*1300 Poverty, Food & Hunger W (3-0) [0.50]
This course examines the nature of poverty, food security and hunger at both the local and global levels. In so doing, it explores the nature of international development more broadly and its relevance to students studying a wide range of disciplines. It aims to provide students with the basic concepts and analytical tools required to reflect critically on international development issues in the world today and the how global poverty, food insecurity and hunger might be alleviated.

**Equates:** AGEC*1300
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*1400 Economics of the Agri-Food System W (4-0) [1.00]
This course introduces students to the major aspects of economics, business and resource use in the Canadian agrifood sector. Students will be exposed to the techniques used by agri-food firms to plan, invest and measure performance. Decision making under both certainty and uncertainty will be considered. Students will be shown how the market equilibrium model can be used to conduct welfare analysis and modified to account for imperfect competition and externalities.

**Restrictions:** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*2410 Agri-Food Markets and Policy W (3-0) [0.50]
Students will be provided with an introduction to agrifood markets, policies and institutions. Focus will be placed on: the role and function of futures markets; domestic agrifood policies; and agri-food trade policies, instruments and institutions. Economic analysis of contemporary issues in agrifood markets will be emphasized.

**Prerequisites:** AGR*2400 or FARE*1400
**Corequisites:** ECON*2310
**Equates:** AGEC*2410
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*2700 Survey of Natural Resource Economics F (3-0) [0.50]
This course examines how humans, within a society, allocate natural resources - e.g., water, land, forests, and fisheries. Economic concepts and methods provide the basis for discussing and understanding both the use and misuse of natural resources.

**Prerequisites:** 1 of ECON*1050, FARE*1040, FARE*1400
**Equates:** AGEC*2700
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*3030 The Firm and Markets F (3-1) [0.50]
A course in microeconomic theory applied to agricultural economics research. The theory of the firm is used to analyze production and resource use in agriculture. Resource allocation issues, risk responsive decision-making, and firm strategy on vertical and horizontal integration are studied. Consumer theory is used to analyze food purchase decision. How theoretical relationships are quantified and used in the analysis of public policy issues is emphasized.

**Prerequisites:** ECON*2310, ECON*2770, ECON*3740
**Equates:** AGEC*3030
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*3170 Cost-Benefit Analysis W (3-0) [0.50]
This course covers the principles and applications of cost-benefit analysis (CBA) in environmental and natural resource issues. This course will present basic concepts and principles, supplemented with case studies of projects applying CBA to illustrate the different issues arising from the use of the CBA technique. Quantitative exercises involving analysis of actual environmental and natural resource data will be used to illustrate the mechanics of established valuations methods such as contingent valuation, hedonic approach and travel cost approach.

**Prerequisites:** 1 of FARE*2700, ECON*2100, ECON*2650
**Restrictions:** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*3250 Food and International Development F (3-0) [0.50]
This course provides students with an economic perspective on issues in international development related to food, agriculture, and household behaviors. Different economic theories and approaches are used to understand various economic phenomena in the development context. Students are encouraged to consider critically an economic approach to the analysis of development issues related to food and agriculture, alongside the perspectives of other social science disciplines. Throughout the course, food and agriculture as development issues are considered primarily on a micro level, with a special focus on household behavior and decision-making.

**Prerequisites:** (FARE*1040 or ECON*1050), (FARE*1300 or ECON*1100)
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*3310 Operations Management FW (3-0) [0.50]
The decision-making role of the operations manager in transforming inputs into desired outputs is the primary focus of this course. The major issues and problems of designing, scheduling, and controlling the production system will be examined.

**Prerequisites:** (ACCT*1220 or ACCT*2220), (1 of ECON*2740, PSYC*1010, STAT*2040, STAT*2060, STAT*2080, STAT*2120)
**Restrictions:** HTM*3120. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*4000 Agrifood Policy W (3-0) [0.50]
A critical analysis of agricultural income, marketing, adjustment and trade problems and policies in the developed countries, with particular emphasis on Canadian agricultural policies.

**Prerequisites:** 15.00 credits including ECON*2310
**Equates:** AGEC*4000
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*4210 World Agriculture, Food Security and Economic Development F (3-0) [0.50]
This course examines the role of agriculture in determining food security within developing countries and in promoting overall processes of economic development. The course uses economic concepts to understand the inter-relationships between agriculture system and access to food, including the supply of food and the livelihoods of those engaged in the agri-food system. Analyses of economic policies and programs in developing countries and their effects on poverty, food security and economic development are conducted.

**Prerequisites:** 10.00 credits including (FARE*1040 or ECON*1050), ECON*1100
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*4220 Advanced Agribusiness Management W (3-0) [0.50]
This course is oriented toward practical application of theory and analytical principles to the identification, analysis and solution of an agribusiness organization/management problems. Students work on a major agribusiness project as management consultants with an owner/operator. The course builds on students’ prior training in accounting, finance, mathematical analysis, computer applications, economics, agriculture and management.

**Prerequisites:** 1 of FARE*2410, BUS*3320, ECON*2770, MGMT*3320
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*4240 Futures and Options Markets W (3-0) [0.50]
This course is an introduction to the study of the theory and application of futures, options and other derivative instruments for marketing, hedging, investment and speculative purposes. Emphasis is placed on applications of agricultural and financial instruments to real business situations.

**Prerequisites:** 10.00 credits including (1 of ECON*2560, ECON*3560, FARE*2410, MGMT*3320)
**Restrictions:** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
**Department(s):** Department of Food, Agricultural and Resource Economics

### FARE*4290 Land Economics F (3-0) [0.50]
The economics of property rights is applied to issues in the allocation of land among agricultural, urban and other uses: contemporary trends, problems and policies in land planning, including expropriation and regulatory takeovers, soil erosion policy, farmland protection policy, endangered species policy and landfills and recycling.

**Prerequisites:** (FARE*2700, or ECON*2310) 0.50 credits at the 3000 or 4000 level in FARE or ECON
**Department(s):** Department of Food, Agricultural and Resource Economics
FARE*4310 Resource Economics W (3-0) [0.50]

This course explores the role of property rights and related institutions in natural resource stewardship. Potential applications of this perspective to natural resource policy, both in Canada and internationally, are considered. Classes use a discussion based approach. The learning objective for the course is the development of critical thinking skills. The readings emphasize original sources. Students are expected to conduct original research on some aspect of the role of property rights and related institutions in the resolution of a current natural resource stewardship problem.

Prerequisite(s): (1 of FARE*2700, ECON*2310, ECON*2100), 0.50 credits at the 3000 or 4000 level in FARE or ECON

Department(s): Department of Food, Agricultural and Resource Economics

FARE*4360 Marketing Research W (3-0) [0.50]

A study of the marketing research function in business with emphasis on its role in providing information to assist managers in making marketing decisions.

Prerequisite(s): 1 of ECON*2740, PSYC*1010, PSYC*2040, STAT*2040, STAT*2050, STAT*2060, STAT*2080

Equate(s): AGEC*4360

Department(s): Department of Food, Agricultural and Resource Economics

FARE*4370 Food & Agri Marketing Management F (3-0) [0.50]

The course focuses on the decision making role of the marketing manager who is responsible for formulating the strategic marketing plan for food and agricultural businesses. The theory of selecting market target(s) for the firm’s product and/or services and the development of the marketing mix (product, price, promotion, distribution) with the aid of market research is covered. Note: Students with credit for this course may not proceed to MCS*1000.

Prerequisite(s): 10.00 credits including (1 of ACCT*2230, AGEC*2230, BUS*2230, COST*2600, MCS*2600)

Equate(s): AGEC*4370, MCS*4370

Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Food, Agricultural and Resource Economics

FARE*4500 Decision Science F (3-0) [0.50]

Quantitative techniques such as classical optimization, mathematical programming, simulation and input-output models are applied to firm, interregional, industry, and international problem situations in agricultural economics, including those dealing with resources and the environment. Time and risk and uncertainty dimensions are addressed.

Prerequisite(s): ECON*2770

Equate(s): AGEC*4500

Department(s): Department of Food, Agricultural and Resource Economics

FARE*4550 Independent Studies I S,F,W (3-0) [0.50]

A project based independent study course for majors in Agricultural Economics (of the Bachelor of Arts or Bachelor of Science in Agriculture degree programs), Agribusiness (of the Bachelor of Commerce degree program), and Environmental Economics and Policy (of the Bachelor of Science in Environmental Sciences degree program).

Prerequisite(s): 10.00 credits including 1 of AGEC*2410, AGEC*2700, AGR*2401/2, FARE*2410, FARE*2700

Equate(s): AGEC*4550

Restriction(s): Instructor consent required. Permission of the instructor and Chair of the Department of Food, Agricultural and Resource Economics is required.

Department(s): Department of Food, Agricultural and Resource Economics

FARE*4560 Independent Studies II S,F,W (3-0) [0.50]

An opportunity to conduct a second independent study project for majors in Agricultural Economics (of the Bachelor of Arts or Bachelor of Science in Agriculture degree programs), Agribusiness (of the Bachelor of Commerce degree program), and Environmental Economics and Policy (of the Bachelor of Science in Environmental Sciences degree program).

Prerequisite(s): 10.00 credits including 1 of AGEC*2410, AGEC*2700, AGR*2401/2, FARE*2410, FARE*2700

Equate(s): AGEC*4560

Restriction(s): Instructor consent required. Permission of the instructor and Chair of the Department of Food, Agricultural and Resource Economics is required.

Department(s): Department of Food, Agricultural and Resource Economics
Food Science

Department of Food Science

**FOOD*2100 Principles of Food Science S.W. (3-0) [0.50]**

The principles involved in the processing, handling and storage of foods are introduced in this course. The relationship of science and technology to food processing is discussed.

*Offering(s):* Offered through Distance Education format only.

*Restriction(s):* FOOD*2150, FOOD*3090, NUTR*2150

*Department(s):* Department of Food Science

**FOOD*2100 Communication in Food Science W (3-0) [0.50]**

Students will acquire basic skills in technical and business communication and be prepared to complete a variety of communication assignments in subsequent semesters. Students will learn and apply the principles of effective written and oral communication.

*Restriction(s):* Restricted to students in BSC.FOOD or BSC.FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*2150 Introduction to Nutritional and Food Science F (3-0) [0.50]**

This interdisciplinary course provides an introduction to the Food and Nutritional Sciences from both historical and modern perspectives. Major themes are the nutritional and functional properties of food, nutrient assimilation, food preservation and safety, and the interactions between food processing, diets and health. (Also listed as NUTR*2150.)

*Prerequisite(s):* (Biol*1040 or Biol*1080), Chem*1040

*Equate(s):* NUTR*2150

*Restriction(s):* FOOD*2010, FOOD*3090 Not available to students registered in BSC.AHN major.

*Department(s):* Department of Food Science

**FOOD*2400 Introduction to Food Chemistry S (3-0) [0.50]**

The chemistry and biochemistry of the major components of foods (lipids, proteins, carbohydrates and water/ice) are introduced in this course. In addition, an overview of some of the reactions and changes in food components which occur during processing, handling and storage will be presented. This course may not be taken for credit by students in the Food Science Major.

*Offering(s):* Offered through Distance Education format only.

*Prerequisite(s):* Chem*1040

*Restriction(s):* FOOD*3030, FOOD*3050

*Department(s):* Department of Food Science

**FOOD*2410 Introduction to Food Processing W (3-0) [0.50]**

Food processes and the relationships between chemistry, microbiology, and engineering as they apply to food processing are discussed. The following topics are included: high and low temperature processes; moisture control and intermediate moisture foods; concentration and dehydration processes; and novel food processing techniques.

*Offering(s):* Offered through Distance Education format only.

*Prerequisite(s):* Chem*1040, (1 of Biol*1040, Biol*1070, Biol*1080, Micro*2420)

*Restriction(s):* FOOD*3160, FOOD*3170 Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*2420 Introduction to Food Microbiology F (3-0) [0.50]**

An introduction to the major groups of microorganisms important in foods is presented in this course, including microbial spoilage of food, food-borne illness, and food fermentations. Sources of contamination during production, processing and storage of foods and evaluation of food processing conditions used to control the presence and/or growth of microorganisms in foods are discussed.

*Offering(s):* Offered through Distance Education format only.

*Prerequisite(s):* 1 of Biol*1040, Biol*1070, Micro*2420

*Restriction(s):* FOOD*3230, FOOD*3240. Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*2620 Food Engineering Principles W (3-2) [0.50]**

Introduction to engineering principles and operations in food processing including heat transfer, fluid flow, material and energy balances, instrumentation and process control concepts.

*Prerequisite(s):* (BIOC*2580 or CHEM*2880), (MATH*1080 or MATH*1200)

*Department(s):* Department of Food Science

**FOOD*3030 Food Chemistry I F (3-3) [0.50]**

This course covers the fundamental principles of the chemistry of foods. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of the major components in food materials such as lipids, proteins, carbohydrates and water.

*Prerequisite(s):* BIOC*2580

*Restriction(s):* Registration is limited to students registered in the BSCH.FOOD, FOOD:C or BASCAHN majors.

*Department(s):* Department of Food Science

**FOOD*3040 Food Chemistry II W (3-3) [0.50]**

This course covers the fundamental principles of the chemistry of foods, as a continuation of FOOD*3030. This course will discuss topics related to the chemistry (physical, organic and analytical) and physics of emulsions and emulsifiers, pigments, flavors and flavors perception, enzymes and processing additives.

*Prerequisite(s):* FOOD*3030

*Restriction(s):* Registration is limited to students registered in the BSCH.FOOD or FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*3050 Food Chemistry I F (3-0) [0.50]**

This course covers the fundamental principles of the chemistry of foods. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of emulsions and emulsifiers, pigments, flavors and flavors perception, enzymes and processing additives. This course is the same as FOOD*3040, without the laboratory component.

*Prerequisite(s):* BIOC*2580

*Restriction(s):* FOOD*2400, FOOD*3030. Not available to students registered in BSCH.FOOD or FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*3060 Food Chemistry II W (3-0) [0.50]**

This course covers the fundamental principles of the chemistry of foods, as a continuation of FOOD*3030. This course will discuss topics related to the chemistry (physical, organic and analytical) and physics of emulsions and emulsifiers, pigments, flavors and flavors perception, enzymes and processing additives. This course is the same as FOOD*3040, without the laboratory component.

*Prerequisite(s):* FOOD*3030 or FOOD*3050

*Restriction(s):* FOOD*3040. Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.

*Department(s):* Department of Food Science

**FOOD*3090 Food Science and Human Nutrition F (3-2) [0.50]**

This course will introduce students to the chemistry and microbiology of food and post-production food handling and processing. It will also introduce students to the role of food components in human nutrition and the interactions between diets and health.

*Prerequisite(s):* (AGR*1250 or AGR*1110), (1 of Biol*1040, Biol*1050, Biol*1080, Chem*1040)

*Restriction(s):* FOOD*2010, FOOD*2150, NUTR*2150. Restricted to students in BSC(AGR) as well as students in the Minor in Agriculture.

*Department(s):* Department of Food Science

**FOOD*3160 Food Processing I F (3-0) [0.75]**

This course builds on basic engineering principles to understand the operation of modern food processing plant facilities. The standard equipment used and the underlying principles that control their operation are examined for various high temperature (blanching, pasteurization, sterilization, evaporation, drying, extrusion) and ambient temperature (size reduction, homogenization, emulsification, centrifugation, filtration, extraction, irradiation) unit operations.

*Prerequisite(s):* ENGG*2660 or [FOOD*2620, (MICR*2030 or MICR*2420)]

*Department(s):* Department of Food Science

**FOOD*3170 Food Processing II W (3-3) [0.50]**

This course looks at various low temperature food processing unit operations (e.g., refrigerated storage, freezers, freeze dryers), the design and operation of ancillary food plant equipment (e.g., refrigeration, boiler, pumping, control, sanitation, water, and wastewater treatment systems) and integration of the various unit operations into a functioning food process.

*Prerequisite(s):* FOOD*3160

*Department(s):* Department of Food Science
FOOD*3230 Food Microbiology F (3-3) [0.75]

Important groups of microorganisms associated with food spoilage, food fermentations, food infections and intoxications are discussed in this course. Intrinsic and extrinsic factors and their relationship to microbial growth, control of microorganisms by food processing and application of Hazard Analysis Critical Control Points (HACCP) programs are also discussed. Laboratory classes will provide experience in microbiological techniques, sampling and basic genetic engineering.

Prerequisite(s): MICR*2420
Restriction(s): FOOD*2420, FOOD*3240 Restricted to students in BSCH.FOOD, FOOD:C, MICR, MICR:C and BASC.AHN majors.
Department(s): Department of Food Science

FOOD*3240 Food Microbiology F (3-0) [0.50]

Important groups of microorganisms associated with food spoilage, food fermentations, food infections and intoxications are discussed in this course. Intrinsic and extrinsic factors and their relationship to microbial growth, control of microorganisms by food processing and application of Hazard Analysis Critical Control Points (HACCP) programs are also discussed. This course is the same as FOOD*3230, without the laboratory component.

Prerequisite(s): MICR*2420
Restriction(s): FOOD*2420, FOOD*3240 Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.
Department(s): Department of Food Science

FOOD*3260 Industrial Microbiology W (3-0) [0.50]

The course will present microbiological and technological principles of the industrial application of microorganisms followed by specific examples. Lectures will cover the basics of metabolic pathways and how these can be manipulated through selection or genetic engineering to increase productivity. The main focus of the course will be in the production of alcoholic beverages but will also include production of biomass, solvents, amino acids and organic acids of direct relevance to the food industry. The laboratory component of the course will include wine production, beer brewing and dairy fermentations. Field trips to a commercial winery and brewery will also aid the learning experience.

Prerequisite(s): MICR*2420
Restriction(s): FOOD*3270 Students must be of legal drinking age in the Province of Ontario. Restricted to students in BSCH.FOOD, FOOD:C, MICR, or MICR:C majors.
Department(s): Department of Food Science

FOOD*3270 Industrial Microbiology W (3-0) [0.50]

The course will present microbiological and technological principles of the industrial application of microorganisms followed by specific examples. Lectures will cover the basics of metabolic pathways and how these can be manipulated through selection or genetic engineering to increase productivity. The main focus of the course will be in the production of alcoholic beverages but will also include production of biomass, solvents, amino acids and organic acids of direct relevance to the food industry. Field trips to a commercial winery and brewery will also aid the learning experience. This course is the same as FOOD*3260, without the laboratory component.

Prerequisite(s): MICR*2420
Restriction(s): FOOD*3260 Students must be of legal drinking age in the Province of Ontario. Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.
Department(s): Department of Food Science

FOOD*3430 Introduction to Food Analysis F (3-0) [0.50]

This course offers an introduction to quantitative analysis of foods by chemical, physical and instrumental means. Determination of both major and minor constituents of foods are discussed.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): FOOD*2400
Restriction(s): FOOD*4120, FOOD*4190
Department(s): Department of Food Science

FOOD*3700 Sensory Evaluation of Foods W (3-3) [0.50]

This course is an introduction to sensory science. Students will gain an understanding of the factors contributing to sensory perception of foods. Sensory methodology and statistical tools for evaluation of all sensory aspects of food will be provided and all students will gain hands-on experience with implementation, statistical analysis and interpretation of sensory data. Consumer sensory testing methods will also be discussed.

Prerequisite(s): (FOOD*2150 or HTM*2700), (1 of STAT*2040, STAT*2060, STAT*2080)
Restriction(s): This is a Priority Access Course. Registration may be restricted to students in BSCH.FOOD, BSCH.FOOD:C or BASC.AHN during certain periods.
Department(s): Department of Food Science

FOOD*4070 Food Packaging F (3-0) [0.50]

Functions of packaging in food preservation systems will be examined using a review of current packaging materials, their properties, production methods and applications for specific products. Additional topics include regulatory, environmental and marketplace influences on food packaging choices.

Prerequisite(s): 8.00 credits in science or engineering
Department(s): Department of Food Science

FOOD*4090 Functional Foods and Nutraceuticals W (3-0) [0.50]

The course examines the relationship of functional foods and nutraceuticals (FFN to food and drugs. The safety and efficacy of individual FFN products, and the regulatory issues that influence the development and commercialization of FFN in global markets are emphasized. Also listed as NUTR*4090.

Prerequisite(s): NUTR*3210
Equate(s): NUTR*4090
Department(s): Department of Food Science, Department of Human Health and Nutritional Sciences

FOOD*4110 Meat and Poultry Processing W (2-3) [0.50]

The course focuses on the principles and techniques employed by the meat industry in the production of raw and semi/fully cooked products. Lectures include a study of muscle structure and its relation to meat quality, the physical properties of meat proteins, lipids and flavour compounds important in meat processing. Practical applications of processing techniques (including producing different products in lab) packaging and merchandizing are emphasized in the laboratory. Other sources of animal proteins, such as eggs, are also covered. Emphasis is put on learning how various food science principles (e.g. emulsification, preservation, HACCP) are used to optimize meat products' quality and safety.

Prerequisite(s): 1 of ANSC*2340, FOOD*3090, FOOD*3160
Department(s): Department of Food Science

FOOD*4190 Advanced Food Analysis F (3-0) [0.50]

In this course the quantitative analysis of foods by chemical and physical methods will be studied with emphasis on modern/advanced technologies. Both major and minor constituents will be discussed.

Prerequisite(s): 1 of CHEM*2400, CHEM*2480, FOOD*3030, FOOD*3050
Co-requisite(s): Pre-requisites may be taken as co-requisites
Restriction(s): FOOD*4120
Department(s): Department of Food Science

FOOD*4220 Topics in Food Science S,F,W (0-3) [0.50]

Independent study of a selected topic in Food Science, involving a review and critical evaluation of the current literature. The course comprises independent library research and students are required to present a concise report in a written paper and in a seminar. Students must make arrangements with both faculty supervisor and the course co-ordinator in a prior course selection period.

Prerequisite(s): 2.50 credits at the 3000 level in Food Science
Restriction(s): Instructor consent required.
Department(s): Department of Food Science

FOOD*4230 Research in Food Science S,F,W (0-3) [0.50]

This course involves independent laboratory research of a selected topic in Food Science, under the supervision of an individual faculty. The laboratory research is based on the literature review conducted in FOOD*4220. In addition, a review and critical appraisal of experimental principles will guide the design of laboratory experiments. Students are required to present a concise report in a written paper and in a seminar. Students must make arrangements with both faculty supervisor and the course co-ordinator in a prior course selection period.

Prerequisite(s): FOOD*4220
Co-requisite(s): FOOD*4220
Restriction(s): Instructor consent required.
Department(s): Department of Food Science

FOOD*4260 Food Product Development F (3-3) [0.50]

This course examines the research and development process related to new food products. Through a series of lectures and presentations students will learn the underlying theory behind food product development including idea generation, prototype development and new product manufacturing, evaluation and product marketing. Students will also gain a real world understanding of the process through their involvement and interaction with invited industry speakers. Students will work in teams with students from other disciplines to plan a food product development project.

Prerequisite(s): FOOD*2100, FOOD*3030, FOOD*3160, FOOD*3230, FOOD*3700
Restriction(s): FOOD*4100, FOOD*4700, MGMT*4020, MGMT*4030
Department(s): Department of Food Science
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD*4270</td>
<td>Food Product Development II W</td>
<td>3-3</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>This course will compliment the Food Product Development I course by further assisting students in gaining a comprehensive understanding of the principles and process of food product development. Students will use the theory obtained from the Food Product Development I course to put into practice and gain real life experience in the planning, conducting, and communicating results as a team while developing a pre-approved food product.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>FOOD*4260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction(s):</td>
<td>MGMT<em>4020, MGMT</em>4030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>Department of Food Science</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD*4310</td>
<td>Food Safety Management Systems W</td>
<td>3-0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Participants will learn and apply principles of food safety management and the systems involved. The course is organized in four modules: plant hygiene, principles of Hazard Analysis Critical Control Point (HACCP), HACCP based food safety programs in Canada, and ISO Food Safety Management Systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering(s):</td>
<td>Offered through Distance Education format only.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>(FOOD<em>2010 or FOOD</em>2150), (FOOD<em>2410 or FOOD</em>3160), (1 of FOOD<em>2420, FOOD</em>3230, FOOD*3240 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>Department of Food Science</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD*4400</td>
<td>Dairy Processing W</td>
<td>3-3</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>The production, processing, chemistry, microbiology and marketing of fluid milk, frozen dairy products, cheese, fermented dairy foods and butter are studied in this course.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>BIOC<em>2580, (FOOD</em>2150 or FOOD<em>3090), ( MICR</em>2030 or MICR*2420)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>Department of Food Science</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD*4520</td>
<td>Utilization of Cereal Grains for Human Food F</td>
<td>3-3</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>The course will cover topics related to the history of agriculture as it relates to cereal grains; basic principles behind grain breeding and its relevance to grain quality and functionality; regulations as they relate to grain quality; fractionation of cereal components and their utilization; relationship between grain structure/ composition and processing of cereal-based foods; principles of analytical tools commonly used to assess grain and product quality; science and technology as it relates to manufacturing and shelf life of common cereal-based foods from wheat, corn, rice and barley; functional and nutritional attributes of cereal grains; recent advances in cereal science and technology and the non-food uses of cereal grain components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prerequisite(s):</td>
<td>BIOC<em>2580, (1 of BIOL</em>1040 , BIOL<em>1070, BIOL</em>1080), (1 of AGR<em>2470, FOOD</em>2150, FOOD<em>3090, NUTR</em>3210)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department(s):</td>
<td>Department of Food Science</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### XII. Course Descriptions, French Studies

#### School of Languages and Literatures

The School reserves the right to determine the appropriate level to be taken by students enrolling in language courses. To that end, students will be asked to fill out a placement questionnaire at the beginning of the course. Literary texts are, at all levels, studied in French. Students registering in these courses will be expected to have the appropriate language proficiency. Courses up to and including FREN*1200 should be taken in sequence (with the exclusion of FREN*1010); they should not be taken concurrently.

Francophone students will not normally be admitted into FREN*1200 and FREN*1300. It is recommended they start their program with FREN*2020, FREN*2060, FREN*2500, or FREN*2520 with the approval of the Faculty Advisor. The following courses are all intended to improve the students’ ability to communicate in French. Use the following chart to determine the appropriate course in which to begin French studies.

**Entry points for French studies**

<table>
<thead>
<tr>
<th>FRENCH BACKGROUND</th>
<th>REGISTER IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario Grade 9 core or less</td>
<td>FREN*1090 DE</td>
</tr>
<tr>
<td>Ontario Grade 10 core or less</td>
<td>FREN*1100 DE</td>
</tr>
<tr>
<td>Ontario Grade 11 core</td>
<td>FREN*1150</td>
</tr>
<tr>
<td>Ontario Grade 12 core</td>
<td>FREN*1200</td>
</tr>
<tr>
<td>Ontario Grade 12 immersion</td>
<td>FREN*1300</td>
</tr>
<tr>
<td>Not sure</td>
<td>Contact the School of Languages and Literatures in order to arrange a placement test with a faculty advisor</td>
</tr>
</tbody>
</table>

#### FREN*1010 Independent French Study S,F (3-0) [0.50]

This course, offered in an intensive immersion format, provides students with the opportunity to boost and strengthen skills in French, both written and oral. This course is connected to the Explore Program which is offered in a francophone setting. Please see the School of Languages and Literatures for further information. A pass/fail grade will be assigned upon completion of the course.

**Restriction(s):** Permission of French Studies, School of Languages and Literatures. Instructor consent required.

**Department(s):** School of Languages and Literatures

#### FREN*1090 Basic French: Reading S-F (3-0) [0.50]

This is a basic course in French grammar and reading, for students who have up to Ontario Grade 9 French (or equivalent) but not above. This course is not intended for students with native or near-native ability in French, including Francophones and French immersion students. Students with advanced French may be dropped from the course.

**Offering(s):** Offered through Distance Education format only.

**Restriction(s):** FREN*1090 cannot be counted toward a specialization in French.

**Department(s):** School of Languages and Literatures

#### FREN*1100 Basic French: Listening F,W (3-0) [0.50]

This basic course in French grammar will emphasize listening skills, for students who have up to grade 10 French (or equivalent) but not above. This course is not intended for students with native or near-native ability in French, including Francophones and French immersion students. Students with advanced French may be dropped from the course.

**Offering(s):** Offered through Distance Education format only.

**Restriction(s):** FREN*1100 cannot be counted toward a specialization in French.

**Department(s):** School of Languages and Literatures

#### FREN*1150 Elementary French F,W (3-0) [0.50]

This is a review course in French grammar, oral and written skills, for students who have completed grade 11 French or equivalent but not above.

**Restriction(s):** Students with native or near-native ability in French, including Francophones and French immersion students, will not be admitted to this course. FREN*1150 cannot be counted toward a specialization in French.

**Department(s):** School of Languages and Literatures

#### FREN*1200 French Language I F,W (3-1) [0.50]

A first year, university-level course for students graduating with a high-school background in core French. Students will practise written and oral French.

**Prerequisite(s):** 1 of FREN*1150, Grade 12U French or permission of the School of Languages and Literatures.

**Restriction(s):** Students with native or near-native ability in French, including Francophones and French immersion students, will not be admitted to this course. This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*1300 French Language II F,W (3-1) [0.50]

This course develops the four language skills in French: reading, writing, listening and speaking through group tasks and activities, grammar exercises and individual writing assignments.

**Prerequisite(s):** FREN*1200 or equivalent, such as grade 12 French Immersion.

**Restriction(s):** FREN*2030 This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*2020 France: Literature and Society F,W (4-0) [0.50]

This course provides an historical introduction to French life and thought as seen through literature and art.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of FREN*1200, FREN*1300, FREN*2030

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*2060 Quebec: Literature and Society F,W (4-0) [0.50]

This course provides an historical introduction to Quebec life and thought from New France to the present as seen through literature, politics, history and art.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of FREN*1200, FREN*1300, FREN*2030

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*2025 French Composition I F,W (3-0) [0.50]

This course provides students with opportunities to develop further their skills in textual analysis and in writing in French.

**Prerequisite(s):** FREN*1300 or FREN*2030

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*2550 Contemporary France W (3-0) [0.50]

This course examines contemporary French and/or Francophone culture, through a variety of media (music, film, internet, etc), recent history and political events. Emphasis on oral work in French (comprehension and expression).

**Prerequisite(s):** FREN*1300 or FREN*2030

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** School of Languages and Literatures

#### FREN*3030 Good and Evil F (3-0) [0.50]

In this course, we will consider a variety of texts in which the lines between good and evil are blurred, making such categorization difficult. Good and evil will be considered in different locations and in different time periods, at both the microscopic level of characters (heroes and villains) and/or at the macroscopic level (utopias and dystopias). Readings on the ethical challenges characters and societies face, and the decisions they make will be used as the basis for oral and written debates in French.

**Offering(s):** First offering - Fall 2017 Offered in odd-numbered years.

**Prerequisite(s):** FREN*2020, FREN*2060, FREN*2520

**Department(s):** School of Languages and Literatures

#### FREN*3090 Classics of French Literature W (3-0) [0.50]

This course offers students the opportunity to engage with texts considered part of the French literary canon. What makes a literary classic? Why do some texts stand the test of time, while others disappear or are excluded from the canon? Students will examine these questions and will analyse texts that may range from the plays of Molière and Racine to the novels of recent francophone Nobel-prize winners.

**Offering(s):** First offering - Winter 2018 Offered in even-numbered years.

**Prerequisite(s):** FREN*2020, FREN*2060, FREN*2520

**Department(s):** School of Languages and Literatures
FREN*3110 Storytelling in the Francophone World W (3-0) [0.50]
This course focuses on storytelling as a genre of folklore in various francophone traditions (French Canadian and American, European, Caribbean, African). Students will consider the functions of storytelling in culture and examine the structural and thematic components of folktales. Students will also explore the nature of storytelling from a performance perspective, reflecting on the elements that make good communication. Put into practice, storytelling will be used as a pedagogical tool to develop speaking, listening, reading and writing skills in French.
Offering(s): First offering - Winter 2018 Offered in even-numbered years.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Department(s): School of Languages and Literatures

FREN*3130 Representing the Self F (3-0) [0.50]
By examining a variety of texts told by a real or fictional ‘I’, this course will explore such literary concerns as believable and unbelievable narrators, biography and autobiography and the construction of the self. Students will put to use their learning about the construction of the self in creating their own first person narrative in French.
Offering(s): Offered in even-numbered years.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Department(s): School of Languages and Literatures

FREN*3140 Women in Literature, Art and Film W (3-0) [0.50]
This course will study French or Francophone women as creators of literary, artistic and filmic works or might take the representation of women in literature, art or film as its focus. Drawing on specific contemporary theories, we will study representations of women’s place, of the female body, class and linguistic identity, and of the creation of artistic work. Particular attention will be paid to the relationship between the personal and the socio-political spheres, sexual difference, and gender roles.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Department(s): School of Languages and Literatures

FREN*3160 Songs, Lyrics and Poetry in French F (3-0) [0.50]
This course will provide students with the opportunity to explore the cultural richness of song lyrics and poetry in the Francophone world. By engaging with a variety of songs including, but not limited to: traditional folk, political songs ("chants engagés"), hip-hop to “World music”, students will explore several facets of this complex subject. Activities include: in-depth research on the arc of critical reception of a given songwriter or band, comparing the treatment of a specific theme (for example “money” or “apathy” or “nostalgia”) across musical genres, researching for a biography of a songwriter/poet (such as Richard Desjardins or Jacques Brel).
Offering(s): Offered in even-numbered years.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Department(s): School of Languages and Literatures

FREN*3170 Fictions of Childhood F (3-0) [0.50]
This course will examine the classics of francophone children’s literature (for example, works by Perrault, la Comtesse de Ségur, Jules Verne, or Goscinny) and take into account representations of children or childhood in autobiographical texts, novels or film. Students will address questions such as: How did children’s literature develop as a separate genre? What are the characteristics of the various types of writing for children (fairytale, adventure fiction, novels of school and home, fantasy)? What is the function of a child narrator in novels for children or adults?
Offering(s): Offered in even-numbered years.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Department(s): School of Languages and Literatures

FREN*3500 French Translation II F (3-0) [0.50]
This course introduces students to an analysis of the similarities and contrasts between French and English grammar. As well, the course introduces students to analysis of various literary styles, and to their application in written translation.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): FREN*2500
Department(s): School of Languages and Literatures

FREN*3520 French Composition II W (3-0) [0.50]
This is a continuation of FREN*2520 with special emphasis on stylistics.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): FREN*2020, FREN*2060, FREN*2520
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods.
Department(s): School of Languages and Literatures

FREN*3610 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3620 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3630 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3640 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3650 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3660 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3670 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3680 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures

FREN*3690 Studies in French Literature and Culture in Nice F,W (3-0) [0.50]
Thematic courses relating to the literature, arts, and society of metropolitan France and of the Francophone world. Options may include other languages, literatures, and other disciplines in the arts and social sciences. For Nice students only.
Prerequisite(s): 1 of FREN*2020, FREN*2030 , FREN*2060
Restriction(s): Admission to Nice Program.
Department(s): School of Languages and Literatures
FREN*3700 Experiential Learning and Language S,F,W (0-0) [0.50]
This course provides an opportunity for independent study based on an experiential project in French Studies. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.
Prerequisite(s): 10.00 credits including 1.50 credits in French Studies.
Restriction(s): A minimum cumulative average of 70% in all French Studies course attempts. Instructor consent required.
Department(s): School of Languages and Literatures

FREN*4010 The Art of Adaptation F (3-0) [0.50]
This course examines the relationship between source text and its adaptation(s). The art of adaptation will be addressed through theories of authorship, identity, intertextuality and genre. Students will reflect on the ways artistic creation is achieved by means of repetition and variation, and will analyse the forms and codes of the traditions that are inherited and often transgressed.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits at the 3000-level in French.
Department(s): School of Languages and Literatures

FREN*4020 Contemporary Francophone Theatre W (3-0) [0.50]
The focus of this course is French and Québécois plays by twentieth-century dramatists. The approach to the texts will center on the social, political, and cultural contexts of the plays as well as representations of class, gender, and the role of language. The course will look at theatre as text, dramaturgy, spectacle and role-playing, as well as examine the role of theatre in contemporary society.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.00 credits at the 3000-level in French.
Restriction(s): FREN*3120
Department(s): School of Languages and Literatures

FREN*4290 Post-Colonial Francophone Fiction W (3-0) [0.50]
This is a survey course of the works of 20th-century Francophone writers from Maghreb, Black Africa and the Caribbean.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.00 credits at the 3000-level in French.
Department(s): School of Languages and Literatures

FREN*4600 Honours Seminar in French Studies F (3-0) [0.50]
This course is a seminar on literary genres, movements and themes, or on the French language.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.00 credits at the 3000-level in French.
Department(s): School of Languages and Literatures

FREN*4740 Research Paper in French Studies I S,F,W (3-0) [0.50]
A research paper in French on an approved topic in French literature or language will be required. Individual attention will be given to methods of research and techniques of writing. This course is intended to serve as an introduction to future research at the M.A. and Ph.D. levels.
Prerequisite(s): 1.00 credits at the 3000-level in French.
Restriction(s): 70% average in all French Studies course attempts is required, although at least 75% is recommended. Instructor consent required.
Department(s): School of Languages and Literatures

FREN*4770 Research Paper in French Studies II S,F,W (3-0) [0.50]
A research paper in French on an approved topic in French literature or language will be required. Individual attention will be given to methods of research and techniques of writing. This course is intended to serve as an introduction to future research at the M.A. and Ph.D. levels.
Prerequisite(s): FREN*4740
Restriction(s): 70% average in all French Studies course attempts is required, although at least 75% is recommended. Instructor consent required.
Department(s): School of Languages and Literatures
Department of Geography

Students majoring in other departments may take a number of Geography courses without the prerequisites listed below if they obtain the permission of the instructor.

Note: Several courses in Geography are listed as acceptable for the Natural and Mathematical Science B.A. Distribution Requirements or as Non-Science Electives for B.Sc. students.

For courses without a semester designation, or with an alternate year designation, please check with the department.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offerings</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG*1200 Society and Space F (3-1) [0.50]</td>
<td>This course introduces key concepts in contemporary Human Geography. The course applies a spatial perspective in exploring a wide ranging series of processes and issues in society. Topics include population growth and migration, models and challenges of urban and rural development, interpretation of cultural landscapes and selected issues relating to social welfare.</td>
<td>0.50</td>
<td>Also offered through Distance Education format.</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*1220 Human Impact on the Environment FW (3-0) [0.50]</td>
<td>A global overview of the changing relationships among society, technology and the environment. This course emphasizes the major stages of human use of resources and the environmental consequences of global changes in production systems. It contrasts Third and First World experiences, focusing on core-periphery relationships.</td>
<td>0.50</td>
<td>Also offered through Distance Education format.</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*1300 Introduction to the Biophysical Environment F,W (3-2) [0.50]</td>
<td>This course provides an introduction to physical geography, focusing on the principles and processes governing climate, landforms, and vegetation systems and their interrelationships and will examine natural and human-induced changes to environmental systems. Laboratories will address techniques of measurement, representation and analysis of environmental systems using maps and satellite imagery, laboratory techniques, and field observation.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*1350 Earth: Hazards and Global Change F,W (3-0) [0.50]</td>
<td>This course investigates physical aspects of natural hazards that affect people and society and will focus on the natural systems and processes that cause climate variability and change, floods, earthquakes, volcanoes, landslides, hurricanes, tornadoes and other natural disasters.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*2000 Geomorphology F (3-2) [0.50]</td>
<td>This is an introduction to geomorphology emphasizing weathering, slope and fluvial processes within drainage basins, and glacial and periglacial processes. Field and laboratory techniques will be applied.</td>
<td>0.50</td>
<td>1 of ENVS<em>1050, ENVS</em>1060, GEOG<em>1300, GEOG</em>1350, GEOL<em>1050, GEOL</em>1100</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2030 Environment and Development F (3-0) [0.50]</td>
<td>This course examines the changing relations between society and ecology by focusing on relations of power, including intra- and inter-state structures and processes. Environmental movements, conflicts, identities and values are considered along with localization and globalization. Particular attention is paid to ecological and development processes and strategies in the developing world.</td>
<td>0.50</td>
<td>4.00 credits, GEOG*1220 is recommended</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2110 Climate and the Biophysical Environment W (3-1) [0.50]</td>
<td>The interrelationships between the atmosphere, lithosphere, hydrosphere, and biosphere to produce distinct physical landscapes (climates, soils, vegetation). Emphasis on the role of climate and the flows of energy, water, and biogeochemicals.</td>
<td>0.50</td>
<td>GEOG<em>1300 or GEOG</em>1350</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2210 Environment and Resources W (3-0) [0.50]</td>
<td>This course examines the interrelationships between people and biophysical processes. The main themes are: 1) characteristics of natural resources and processes through which they are developed and used and 2) human response to environmental conditions, including natural hazards and global change. Contemporary Canadian case studies will be presented at the regional and national scales.</td>
<td>0.50</td>
<td>Also offered through Distance Education format.</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2230 Economic Geography F (3-0) [0.50]</td>
<td>An introduction to the spatial distribution of economic activity. The course examines patterns, processes and problems in extractive activities, manufacturing, marketing and the service sector, including the transportation of commodities and people. The principles of economic location are applied to regional economic analysis and development.</td>
<td>0.50</td>
<td>GEOG*1200</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2260 Applied Human Geography W (3-2) [0.50]</td>
<td>This course introduces students to the geographical research process, guiding them through key methodological issues and techniques in human geography. The lab component of the course focuses on data collection using secondary documents, surveys, interviews, and participant observation, as well as both quantitative and qualitative analysis techniques.</td>
<td>0.50</td>
<td>GEOG<em>1200 or (ANTH</em>1150 and GEOG*1220)</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*2420 The Earth From Space F (2-3) [0.50]</td>
<td>This course provides an introduction to the principles and techniques of air photo and satellite image interpretation. Topics include stereoscopic viewing, parallax, flightline planning, and mapping from air photos. Lab exercises focus on specific applications in natural habitats and in rural and urban settings.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*2460 Analysis in Geography F (3-2) [0.50]</td>
<td>The application of modern techniques to geographic study. The interpretation of geographic phenomena by objective methods. Major honours students in Geography must complete this course by the end of semester 4.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*2480 Mapping and GIS F,W (3-2) [0.50]</td>
<td>An introduction to the theory and techniques of manipulating and displaying spatial data in a GIS (Geographic Information System). Mapping concepts such as scale, co-ordinate systems, map projections, symbolization and vector data encoding are introduced. Major honours students in Geography must complete this course by the end of semester 4.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*2510 Canada: A Regional Synthesis W (3-0) [0.50]</td>
<td>This course is designed to provide a better understanding of the nature and basis of Canadian regionalism. The first section of the course stresses the biophysical base and the inequality of the natural resource endowment. The historical geographic approach and the systematic overviews of contemporary Canada stress respectively the development and nature of the Canadian space-economy. The final section on regions, regionalism and nationalism provides an overview of the heartland-hinterland dichotomy and centrifugal and centripetal forces operative in the nation.</td>
<td>0.50</td>
<td>Department of Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG*3000 Fluvial Processes F (3-2) [0.50]</td>
<td>This course examines processes and landforms associated with rivers. Particular emphasis is placed on the interaction between water and sediment movement and channel morphology. Case studies of human impact on river systems are presented.</td>
<td>0.50</td>
<td>GEOG<em>2000, (GEOG</em>2460 or STAT*2040)</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*3020 Global Environmental Change F (3-1) [0.50]</td>
<td>Major global environmental issues examined include climate change, deforestation, desertification and global fisheries. This course is interdisciplinary, exploring the interactions of biophysical processes with human socio-economic dynamics, including policy initiatives. Particular attention is given to global climate change, its causes, its nature and extent, its implications for ecosystems and societies, and its governance implications.</td>
<td>0.50</td>
<td>7.50 credits, (GEOG*2210 recommended)</td>
<td>Department of Geography</td>
</tr>
<tr>
<td>GEOG*3050 Development and the City W (3-0) [0.50]</td>
<td>This course examines different theoretical and policy perspectives of urbanization and urban development, as well as social, economic and environmental living conditions in cities of the global “south”. It refers to concrete examples of cities in their national and international context, paying due attention to diversity and the fluidity of urban-rural boundaries. Specific urban development issues, including migration, housing, employment, health and environment are also addressed.</td>
<td>0.50</td>
<td>7.50 credits, (GEOG<em>2030 and GEOG</em>2260 recommended)</td>
<td>Department of Geography</td>
</tr>
</tbody>
</table>
GEOG*3090 Gender and Environment F (3-0) [0.50]
This course introduces feminist scholarship and perspectives to explore men and women's experiences with both the natural and built environment. The course draws on case studies from developing and developed countries to demonstrate the importance of gender difference in understanding human interactions with the environment. Students will observe gendered use, access, knowledge, responsibility and control in rural and urban landscapes.
Prerequisite(s): 7.50 credits, (GEOG*2210 and GEOG*2260 recommended)
Department(s): Department of Geography

GEOG*3110 Biotic and Natural Resources F (2-2) [0.50]
This course focuses on the ecological basis for resource management, evaluates a number of current ecological theories and addresses their implications for resource management.
Prerequisite(s): (GEOG*2460 or STAT*2040), (1 of BIOL*2060, BOT*2050, ENVB*2030, ENVS*2030, GEOG*2110)
Department(s): Department of Geography

GEOG*3210 Management of the Biophysical Environment F (3-0) [0.50]
This course provides an examination of resource management, focusing on public and private decision-making processes and considers techniques for evaluating resources, including Environmental Impact Assessment (EIA) and risk analysis. Emphasis is on the economic, social and environmental implications of resource development and use. Contemporary Canadian case studies will be presented at appropriate scales.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 7.50 credits including (ENVS*2150 or GEOG*2210)
Department(s): Department of Geography

GEOG*3320 Food Systems: Issues in Security and Sustainability F (3-0) [0.50]
Many argue that current food systems are unsustainable and will be unable to provide adequate and appropriate nutrition for the global society in the 21st century. This course will explore this issue by taking a global and historic perspective to understand the structure and functioning of agriculture and food systems. We will pay particular attention to the interaction of farms with social, economic, institutional and environmental forces that combine to shape patterns of agricultural activity. In particular, we will explore ways of assessing the extent to which different kinds of food systems are “sustainable” as well as assess how resilient and robust these food systems are to environmental problems (such as climate change) and economic upheaval.
Prerequisite(s): 7.50 credits
Department(s): Department of Geography

GEOG*3420 Remote Sensing of the Environment W (2-3) [0.50]
This course explores the nature and acquisition of remotely sensed imagery, and provides students with the technical expertise required to process and interpret this type of digital data. The application of digital image processing techniques to analyzing geographic problems is stressed, and its integration in a Geographic Information Systems (GIS) environmental is demonstrated.
Prerequisite(s): 10.00 credits including GEOG*2420
Department(s): Department of Geography

GEOG*3480 GIS and Spatial Analysis F, W (2-3) [0.50]
This course focuses on the use of raster and vector-based geographic information systems to analyze spatial data. Topics include map digitizing, data query and overlay, spatial interpolation, multi-criteria evaluation, least cost pathway determination and digital elevation models. This course requires some familiarity with numerical methods and computer operations.
Prerequisite(s): 10.00 credits including GEOG*2480
Department(s): Department of Geography

GEOG*3490 Tourism and Environment W (3-0) [0.50]
An integrative perspective on tourism, addressing diverse interactions between people and tourist resources. Emphasis is on experiences derived from the use of resources, the environmental, economic and cultural impacts of tourism, and approaches to managing these impacts.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 7.50 credits
Department(s): Department of Geography

GEOG*3600 Geography of a Selected Region U (3-0) [0.50]
The study of an area which will include topics in physical, economic, social and historical aspects of geography.
Prerequisite(s): 7.50 credits
Department(s): Department of Geography

GEOG*3610 Environmental Hydrology W (3-1) [0.50]
An introductory course in hydrology, the study of water in the environment. Emphasis is placed on understanding and modeling the hydrologic cycle. Topics include hydrologic processes, water resources, and case studies of freshwater systems.
Prerequisite(s): 7.50 credits, (GEOG*2460 or STAT*2040), (1 of GEOG*2000, GEOG*2110, or another 2000 level earth science or engineering science course is recommended)
Department(s): Department of Geography

GEOG*4110 Environmental Systems Analysis F (3-6) [1.00]
An integrated systems approach to solving issues of environmental evaluation, impact and development. Focus will be on the biophysical components of the environment.
Prerequisite(s): GEOG*3110 or GEOG*3610
Department(s): Department of Geography

GEOG*4150 Catchment Processes W (3-2) [0.50]
This course examines the basic properties and flow characteristics of fluids that control the entrainment and transport of sediment by air and water. Bedform development in fluvial, coastal and aeolian environments are also discussed in relation to fluid flow mechanics. Lectures are complemented by weekly labs using the wind tunnel, flame and wave tank.
Prerequisite(s): GEOG*3000
Department(s): Department of Geography

GEOG*4200 Social Life of Cities F (3-0) [0.50]
Many of the traditional features of cities are changing in light of powerful forces of globalization. The course examines spatial patterns and processes of economic restructuring, social dynamics and political change in Canadian and non-Canadian cities. Students discuss and interpret evolving urban forms from a geographical perspective.
Prerequisite(s): GEOG*2260, (GEOG*3050 recommended)
Restriction(s): GEOG*3400
Department(s): Department of Geography

GEOG*4210 Environmental Governance F (3-1) [0.50]
This course provides an opportunity for advanced studies in resource and environmental governance. A central aim is developing an understanding of principles, practices and emerging issues relating to environmental governance.
Prerequisite(s): GEOG*3210
Department(s): Department of Geography

GEOG*4220 Local Environmental Management W (3-0) [0.50]
This course explores local environmental management from two perspectives: state-driven (where local government agencies or forums created by governments are used) and non-state driven (where local actors come together in new governance arrangements to undertake environmental management). Through comparing and contrasting these broad perspectives in an experiential learning setting, the course builds understanding of a key trend in environmental governance.
Prerequisite(s): GEOG*3210
Department(s): Department of Geography

GEOG*4230 Environmental Impact Assessment W (3-0) [0.50]
This course examines environmental impact assessment (EIA) from philosophical, methodological and institutional perspectives. The evolution of EIA in Canada will be the focus. Case studies illustrating major issues and applications will be presented at a variety of geographical scales. The preparation and presentation of a research project is an integral component.
Prerequisite(s): GEOG*3210
Equate(s): ENVS*4220
Department(s): Department of Geography

GEOG*4250 Coastal Processes F (3-2) [0.50]
This course examines the geomorphic processes and associated landforms found in the coastal zone. Initially the focus is on developing an understanding of the major controls on coastal erosion and sediment transport, including waves, nearshore currents and water level fluctuations. This is followed by the study of features and processes in selected coastal environments such as beaches, barrier islands and spits, coastal sand dunes and bluff coasts. In each case applications to problems of coastal management are introduced.
Prerequisite(s): 1 of GEOG*3000, GEOG*3610, GEOG*3620
Department(s): Department of Geography
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites/Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG*4390</td>
<td>Seminar in Rural Geography W (3-0) [0.50]</td>
<td>GEOG*4390</td>
<td>This course surveys themes and issues in contemporary rural geography. Specific attention is given to the processes of restructuring and change in rural systems in Canada and other developed economies. Themes include transformations in the use of rural land, the new rural economy, restructuring in service delivery, and the sustainability of rural communities and systems. Prerequisite(s): GEOG<em>2260, GEOG</em>3320 Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4480</td>
<td>Applied Geomatics W (3-6) [1.00]</td>
<td>GEOG*4480</td>
<td>This course adopts a project-oriented approach to the application of Geographic Information Systems (GIS) and remote sensing in spatial analysis. Students will have the opportunity to design and implement a research project using geomatics techniques to investigate a problem in any area of Geography. Prerequisite(s): GEOG*3480 Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4690</td>
<td>Geography Field Research F (3-6) [1.00]</td>
<td>GEOG*4690</td>
<td>This course provides an opportunity for senior students to develop skills in the design, implementation and presentation of a field research project. The course involves a field trip of about 10-14 days, either in Canada or abroad. This component of the course takes place between the end of the summer session and the start of classes in the fall semester. Classes during the fall semester focus on the analysis and interpretation of data and incorporate student research seminars. Information on the location and cost of the field research course is available from the department in the winter semester prior to each fall offering. Prerequisite(s): 12.50 credits Restriction(s): Restricted to majors in Earth Surface Science, Environmental Geoscience and Geomatics, Environmental Governance, Geography and B.Sc.(Env.) with an overall average of at least 70% at the time of registration. Instructor consent required. Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4880</td>
<td>Contemporary Geographic Thought W (3-0) [0.50]</td>
<td>GEOG*4880</td>
<td>A critical overview of the evolution and current status of Geography. Particular emphasis will be given to the variety of approaches and convergence and divergence within the discipline. The interaction between human and physical geographers and their approaches to issues and the subject will be analyzed. Restriction(s): Restricted to major honours students in Geography at semester 6 or above. Department(s): Department of Geography</td>
</tr>
<tr>
<td>GEOG*4990</td>
<td>Independent Study in Geography U (0-3) [0.50]</td>
<td>GEOG*4990</td>
<td>The independent study option is designed to provide senior undergraduate students with an opportunity to pursue library or field research under faculty supervision and to prepare a research report. Formal agreement between the student and the faculty supervisor is required, as is approval of the department chair. Restriction(s): Restricted to majors in Earth Surface Science, Environmental Geoscience and Geomatics, Environmental Governance, Geography and B.Sc.(Env.) with an overall average of at least 70% at the time of registration. Instructor consent required. Department(s): Department of Geography</td>
</tr>
</tbody>
</table>
**German Studies**

School of Languages and Literatures

**NOTE:** The School reserves the right to determine the appropriate level to be taken by students enrolling in language courses.

**GERM*1100 Introductory German I F,W (2-2) [0.50]**

This is a foundational course in German. Students will attain a basic knowledge of the language and practice all four language skills (listening, speaking, reading and writing). They will also learn about aspects of German culture. This course may not normally be taken by anyone who has Grade 12U German.

**Offering(s):** Also offered through Distance Education format.

**Department(s):** School of Languages and Literatures

**GERM*1110 Introductory German II W (3-1) [0.50]**

This course provides for an intensification of the four language skills introduced in GERM*1100. Students will attain a grasp of essential grammatical concepts and the ability to converse comfortably in everyday situations. This course may not normally be taken by anyone who has Grade 12U German.

**Prerequisite(s):** GERM*1100

**Department(s):** School of Languages and Literatures

**GERM*2050 Introduction to Literature F (2-1) [0.50]**

This course introduces students to the scholarly study of literature, including critical commentaries. The course focuses on the notion of a European literary tradition in which works by German and Italian authors are key. The lectures are in English, but students taking the course under this code will read texts originally written in German in the original language and Italian works in English translation. Students will submit some work in German.

**Prerequisite(s):** GERM*2490

**Restriction(s):** ITAL*2050

**Department(s):** School of Languages and Literatures

**GERM*2400 Contemporary Germany W (3-0) [0.50]**

A multimedia approach to contemporary German culture, 20th-century history and recent political events. Emphasis on oral work in German.

**Prerequisite(s):** GERM*1110 or equivalent

**Department(s):** School of Languages and Literatures

**GERM*2490 Intermediate German I F (3-1) [0.50]**

This course will include systematic oral and written practice, discussion of contemporary texts, and comprehensive grammar review.

**Prerequisite(s):** Grade 12U German or GERM*1110

**Department(s):** School of Languages and Literatures

**GERM*2500 Intermediate German II W (3-1) [0.50]**

This course provides for further development of conversational and writing skills and serves as an introduction to more complex grammar.

**Prerequisite(s):** GERM*2490

**Department(s):** School of Languages and Literatures

**GERM*3020 Myth and Fairy Tales in Germany W (1-0) [0.50]**

The course explores the role of mythology, fairy tales and legends in German literature and culture of the late 18th and 19th centuries. Topics may include the formation of a national identity, the allegorical fairy tale and its role in Romanticism, women and the fairy tale, the fairy tale and the socialization of children (incl. Disney), romantic mythology in music, art and literature. Authors may include Goethe, Brothers Grimm, ETA Hoffman, Wagner. Lectures and texts are English. Students registered in GERM*3020 will meet a fourth hour per week to discuss texts in German. This course is offered in conjunction with HUMN*3020.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** GERM*2050

**Co-requisite(s):** HUMN*3020

**Restriction(s):** GERM*3440, HUMN*3440

**Department(s):** School of Languages and Literatures

**GERM*3470 Holocaust & WWII in German Lit. & Film W (1-0) [0.50]**

This course focuses on texts and films pertaining to World War II and the Holocaust, the development of the thoughts and the language of genocide, and the representation of the Holocaust in literature and films. The objective is to gain an understanding of the ideas and emotions underlying ethnocentrism and anti-Semitism, and to consider artistic responses to the experience of persecution and mass-murder. Lectures and discussions are in English. Students registered in GERM*3470 will meet a fourth hour per week to discuss texts in German. This course is offered in conjunction with HUMN*3470

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** GERM*2050

**Co-requisite(s):** HUMN*3470

**Department(s):** School of Languages and Literatures

**GERM*3510 Advanced German II W (3-0) [0.50]**

This course provides a continued study of advanced German grammar, as well as aspects of structure and style of the German language, through oral presentations and discussions with a special emphasis on essay writing.

**Offering(s):** Offered through Distance Education format only.

**Prerequisite(s):** GERM*3500 or GERM*3540

**Restriction(s):** GERM*3530

**Department(s):** School of Languages and Literatures

**GERM*3540 Advanced German F (4-0) [1.00]**

This course provides intensive study of the German language, with particular emphasis on reading competence, writing and speaking skills, enhanced by the study of advanced German grammar, and of cultural materials such as literary texts and film.

**Prerequisite(s):** GERM*2500

**Restriction(s):** GERM*3500 , GERM*3510

**Department(s):** School of Languages and Literatures

**GERM*3600 Directed Readings in German Studies U (3-0) [0.50]**

A reading course in German literature designed according to the program and interest of the individual student.

**Restriction(s):** Instructor consent required.

**Department(s):** School of Languages and Literatures

**GERM*3700 Experiential Learning and Language S,F,W (0-0) [0.50]**

This course provides an opportunity for independent study based on an experiential project in German. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.

**Prerequisite(s):** 10.00 credits including 1.50 credits in German.

**Restriction(s):** A minimum cumulative average of 70% in all German course attempts.

**Instructor consent required.

**Department(s):** School of Languages and Literatures

**GERM*4940 Research Paper in German Studies U (3-0) [0.50]**

A reading course on some approved topic in German language or literature, leading to an end-of-term research paper.

**Restriction(s):** Instructor consent required.

**Department(s):** School of Languages and Literatures
Greek

Notes: Literary texts are, at all levels, studied in the original language. Students registering in these courses will be expected to have the appropriate knowledge. Higher level courses in Greek are available as language modules attached to selected Classical Studies courses. (See Classical Studies course descriptions.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREK*1100</td>
<td>Preliminary Greek I W (3-0) [0.50]</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td></td>
<td>This is a beginner course in Greek, providing the fundamentals of structure and idiom. (This course may not be taken by anyone who has 3U Greek).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREK*1110</td>
<td>Preliminary Greek II F (3-0) [0.50]</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td></td>
<td>A continuation of GREK*1100.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s): GREK*1100 or 4U Greek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREK*2020</td>
<td>Greek Language and Culture W (3-0) [0.50]</td>
<td></td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td></td>
<td>Consolidation of fundamental morphology and syntax acquired in GREK<em>1100 and GREK</em>1110. Intensive reading in texts that also illuminate aspects of Greek culture.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s): GREK*1110</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department(s): School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## History

### HIST*1010 The Early Modern World F,W (3-0) [0.50]
This course will deal with the evolution and expansion of European society during the pre-industrial era. Commencing with the Renaissance and Reformation it will survey such themes as the voyages of exploration, the impact of western culture on indigenous societies, the development of commercial capitalism, the transformation of science and technology and the conflict between imperial powers in Europe and overseas.

**Department(s):** Department of History

### HIST*1050 Invitation to History F,W (3-0) [0.50]
This course introduces students to the basics of the historian's craft, including interpreting primary sources, locating and critically analyzing secondary sources, and writing for history. For more detail on the content of sections consult the History department website. (C) [https://www.ouguelph.ca/history](https://www.ouguelph.ca/history)

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs and specializations during certain periods. Please see the departmental website for more information.

**Department(s):** Department of History

### HIST*1110 The Modern World F,W (3-0) [0.50]
This course covers world history since the nineteenth century with particular emphasis on Asia, Africa, and the Americas. (C)

**Department(s):** Department of History

### HIST*1250 Science and Technology in a Global Context F,W (3-0) [0.50]
This course is an introduction to the culturally specific ways in which science and technology have developed historically from the ancient period through the twenty-first century. Emphasis will be placed on the patterns in which scientific knowledge and practices have traveled and been constructed across cultures and the interconnected but distinct histories of science and technology. (C)

**Restriction(s):** ASCI*1000

**Department(s):** Department of History

### HIST*2000 The British Isles, 1066-1603 S,F (3-0) [0.50]
A comparative survey of the histories of England, Scotland, Ireland and Wales during the Medieval and Early Modern eras. Stress will be placed upon common themes such as institutional development, warfare and the often violent interaction between the English and the Celtic peoples.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2020 Film as History W (2-1) [0.50]
This course will consider film both as a source and as a comment on the past. Topics will vary depending on instructor expertise, and may include film as propaganda, the city in film, film as myth, women and gender in film, film and war.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2040 War and Society F (3-0) [0.50]
Concentrating on developments following the introduction of gunpowder, the course will consider the evolution of military strategy and tactics, the impact of technology on warfare, and the relationship between war and civilian populations.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2070 World Religions in Historical Perspective W (3-0) [0.50]
This course introduces students to the comparative study of religion in history and the interaction of religion with general social and cultural trends over time. A focus on the cultural roots of specific traditions and religion as a metaphor will account for the spread of these diverse traditions across social and national boundaries. This course will consider eastern religions, primal religions, "People of the Book" (Judaism, Christianity, Islam considered together), and the "New Religious Movements" (a category considering religions and para-religions produced by modernity).

**Offering(s):** Offered through Distance Education format only.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2100 Pre-Confederation Canada F (3-0) [0.50]
This course studies selected events and issues in pre-Confederation Canadian history including political, economic, social, and cultural developments. (C)

**Prerequisite(s):** 2.00 credits, including 0.50 credits in History at the 1000 level

**Department(s):** Department of History

### HIST*2110 Animals and Society W (3-0) [0.50]
This course provides a historical survey of modern human-animal relationships and the contradictions that characterize them. Topics may include: hunting and sporting, horses and 19th century cities, natural history and the zoo, history of veterinary medicine, 20th century animal sports, the birth of industrial animal agriculture, animals as biotechnology, anti-cruelty movements, petkeeping and consumerism, animal figures in popular culture.

The thematic or geographic focus of the course may vary according to the expertise of the instructor.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2110 Animals and Society W (3-0) [0.50]
This course provides a historical survey of modern human-animal relationships and the contradictions that characterize them. Topics may include: hunting and sporting, horses and 19th century cities, natural history and the zoo, history of veterinary medicine, 20th century animal sports, the birth of industrial animal agriculture, animals as biotechnology, anti-cruelty movements, petkeeping and consumerism, animal figures in popular culture.

The thematic or geographic focus of the course may vary according to the expertise of the instructor.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2190 Celtic Ireland and Britain in the Early Middle Ages W (3-0) [0.50]
This course will explore the Celts of Ireland and Britain from the time of the druids to the post-millennium emergence of literature relating to a king called Arthur. Reflecting on what we know of the Celts, how we know it, and what the term means, the course will examine topics such as the development of kingdoms and elite 'heroic' culture, the spread of Christianity, the law, everyday life and the family, art and literature, and the interaction between the Celts and their neighbours.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2200 The Medieval World F (3-0) [0.50]
The major events and developments in Europe, north Africa and Western Asia from the fall of the Roman Empire to 1500 a.d. Emphasis will be placed on the evolution of western Christianity, the rise and expansion of Islam, the emergence of the University, and the growth of literacy and print culture culminating in the humanist movement of the late Middle Ages.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2220 Consumer History in Historical Context S (3-0) [0.50]
This course explores how the things we buy shape our personal identities and how individuals relate to corporations and advertisers, in the context of the emergence of modern consumer society from the 18th century to the present. It critically examines the shift from home-production economies to mass production. Examining how developments such as department stores, product branding, modern advertising, urbanization, and suburbanization have shaped society, politics, and the economy, the course provides a historical context for contemporary debates about consumer culture.

**Offering(s):** Offered through Distance Education format only.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History

### HIST*2250 Environment and History F,W (3-0) [0.50]
An introduction to the field of environmental history - its nature and uses. This course provides a historical perspective to environmental issues. It examines the causes and impact of human-induced modification of the natural world in selected areas of the globe, the evolution of attitudes and ideas about the natural world over time and the growth of conservation/environmental issues and movements.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 2.00 credits

**Department(s):** Department of History
HIST*2260 Religion and Society W (3-0) [0.50]
This course surveys the major trends in religious beliefs and practices and their social impact since the Reformation. The focus of the course is on the British Isles and North America with some discussion of developments in Continental Europe.
Offering(s): 
Offered through Distance Education format only.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2280 Hockey in Canadian History S (3-0) [0.50]
Hockey provides a valuable prism through which major cultural, socio-economic and even political developments within Canada can be reflected. This course reviews the considerable role that hockey has played in Canada’s past-Confederation history. From the late nineteenth century and throughout the twentieth century, hockey has helped to inform the nation’s sense of self and has also reflected prevailing social attitudes and cultural values within Canada.
Offering(s): 
Offered through Distance Education format only.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2300 The United States Since 1776 F (3-0) [0.50]
This course provides a survey of United States history from the Revolutionary period to the present. Course lectures, readings and assignments ask students to interrogate broadly the social, cultural, economic and political changes and continuities in America, as well as the nation's emergence as a superpower.
Prerequisite(s): 
2.00 credits
Restriction(s): 
HIST*2150, HIST*2650
Department(s): Department of History

HIST*2340 Migrations in the Atlantic World, 1500-1850 W (3-0) [0.50]
The rise of the Atlantic world, with its variety of communities, cultures, and political and social regimes, was in the context of forced and voluntary migrations of Africans, Europeans, and Asians. The course will explore the nature of these societies and the linkages and interactions within and between the different areas of this broad but integrated region. The course emphasis from semester to semester may be on comparative examination of the social and political development and experiences of the peoples of any or all of its regions; of its slave and labour regimes; and of the evolution of modern nationhood.
Prerequisite(s): 
2.00 credits
Restriction(s): 
HIST*2110, HIST*2960
Department(s): Department of History

HIST*2450 The Practising Historian F,W (3-0) [0.50]
This course is designed to acquaint students with the development of historical writing, the interpretive problems surrounding the study of history, and the methods employed by historians. (C)
Prerequisite(s): 
2.00 credits, including 0.50 credits in History at the 1000 level
Department(s): Department of History

HIST*2500 Britain Since 1603 U (3-0) [0.50]
This course will survey the history of England and the Celtic Regions of the British Isles from the close of the Tudor period up to the mid-20th century. Emphasis will be placed on social and economic development before and after the Industrial Revolution as well as on those political and military challenges which have characterized Britain's status as a global power in the modern era.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2510 Modern Europe Since 1789 F (3-0) [0.50]
This course will deal with the emergence of modern European society as the result of socio-economic and consequent political changes from the French Revolution, through the World Wars, to the collapse of communism and the formation of the European Union.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2600 Post-Confederation Canada W (3-0) [0.50]
This course is a study of selected events and issues in post-Confederation Canadian history including political, economic, social, and cultural developments (C).
Prerequisite(s): 
2.00 credits, including 0.50 credits in History at the 1000 level
Department(s): Department of History

HIST*2800 The History of the Modern Family W (3-0) [0.50]
An examination of the family since 1500 with particular emphasis on the English speaking world, though comparisons will be made with other societies. Topics considered will include: change in the legal structure of marriage; power relations and sex roles within the family; the role of kin in the family; changing attitudes to sexuality; the attitude of state to the family and its functions.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2820 Modern France Since 1750 U (3-0) [0.50]
This course is a survey of French history from the beginning of modernization in the 18th century to the challenges of the late 20th century. Topics will include the Revolution, the Napoleonic period, social and political transformation in the 19th century, the Great War, the defeat of 1940 and Vichy, and the remarkable changes in French life since the Second World War.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2850 Ancient Greece and Rome W (3-0) [0.50]
The history of the Mediterranean World from prehistoric Greece through Classical Greece and Rome to the legalization of Christianity in the Roman Empire in the 4th century will be covered in this course.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2890 Early Islamic World F (3-0) [0.50]
This course is an introduction to the history of Islam. The course will consider the founding of Islam, and its global diffusion, from the seventh to the fourteenth centuries.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2910 Modern Asia W (3-0) [0.50]
An introduction to the histories and cultures of Asia since 1750. This course will consider the evolution of Asian religions, cultural identities, concepts of state and of society in the modern era.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2920 Republican Latin America W (3-0) [0.50]
This course will study selected themes in the history of Latin American republics from the independence period to the modern era.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2930 Women and Cultural Change F (3-0) [0.50]
Using gender and ethnicity as the main categories of analysis, this course examines the history of women within one global geographical region such as Asia, South America and the Caribbean or North America. The roles women have played in political, economic and private life will be emphasized.
Prerequisite(s): 
2.00 credits
Department(s): Department of History

HIST*2970 Sexuality and Gender in History U (3-0) [0.50]
This course provides an introduction to the issues of sexuality and gender within history. The course will enable students to develop an understanding of how issues of masculinity, femininity, and sexuality were developed and defined across cultures. The chronological and geographic focus of the course may vary according to the interests and expertise of the instructor.
Offering(s): 
Also offered through Distance Education format.
Prerequisite(s): 
5.75 credits including 1.00 credits in History
Department(s): Department of History

HIST*2970 Modern India W (3-0) [0.50]
This course studies the history of modern India from 1757 to the present day. Topics include: European and British imperialism in India, Indian reactions to imperialism, socio-religious movements, the birth of nationalism and the nation-state in India, civil society and social issues in a developing nation, regionalism, foreign policy and India's place in the 21st century.
Prerequisite(s): 
7.50 credits
Department(s): Department of History
## XII. Course Descriptions, History

### HIST*3080 United States in the World F (3-0) [0.50]
This course is a study of the United States as a global phenomenon. Thematic topics will go beyond foreign policy and military history to include imperialism, immigration, globalization, race, gender, ethnicity, consumption, tourism, and international cultural industries.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3130 Popular Culture and Punishment, 1700-1900 F (3-0) [0.50]
The course will survey the social, political and intellectual influences upon the leisure activities of Europeans and Americans in the period with special reference to institutions such as the prison, the asylum, the reformatory and the regulation of popular culture and leisure activities. Witchcraft and the witch-hunt will be discussed.

- **Offering(s):** Also offered through Distance Education format.
- **Prerequisite(s):** 7.50 credits including (HIST*1010 or SOC*1500)
- **Department(s):** Department of History

### HIST*3140 Witch-hunts and Popular Culture S (3-0) [0.50]
This course will explore the phenomenon of the 'witch-hunts' in early modern Europe through a focus on Scotland in the period 1560-1700. In addition to placing the witch-hunts in their historical context by providing students with the background to Scotland's political, religious, and social history in the early modern period, the course will introduce students to the considerable body of historical writing on the subject of the witch-hunts and give them hands on experience with primary source documents in order to discuss specific witch trials themselves. Popular and elite conceptions of witchcraft will be explored, as well as gender history.

- **Offering(s):** Offered through Distance Education format only.
- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3150 History and Culture of Mexico U (3-0) [0.50]
This course will cover the history and culture of Mexico from its Precolumbian civilizations to the present. Topics may include: Aztec and Mayan civilizations, European discovery and conquest, inquisition, convents, independence, the Mexican revolution, development, NAFTA and Zapatista insurgency in Chiapas.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3160 Canadian Political History U (3-0) [0.50]
This course consists of a detailed study of the background and development of the Canadian political process and culture. It devotes special attention to the changing role and character of the state.

- **Prerequisite(s):** 7.50 credits including (1 of HIST*2100, HIST*2600 or HIST*2601/2 ; POLS*1400, POLS*2300)
- **Department(s):** Department of History

### HIST*3180 Canada Since 1945 U (3-0) [0.50]
This course provides an in-depth examination of political, social, cultural, and economic changes in Canada since the Second World War. Particular attention will be paid to the increased diversity of the Canadian population, the development of Canadian institutions, and the changing role played by Canada in the world.

- **Prerequisite(s):** 7.50 credits including (HIST*2600 or HIST*2601/2 )
- **Department(s):** Department of History

### HIST*3200 Youth in History F (3-0) [0.50]
This course examines the social history of childhood, youth and adolescence in western culture and how life-cycles vary as a function of class, race and ethnicity, gender and sexuality. It will examine the experiences of young people in different historical eras. Questions to be explored include: Does the notion of adolescence transcend history and culture? How have experts constructed institutions such as the high school, the juvenile justice system, the media, medical and social scientific research to channel youth rebellion? Historical case studies will be selected to show generations in political, community and domestic conflict. This interdisciplinary history course draws upon sociology, anthropology, cultural studies, art, music, literature, academic writing and research from Europe, Canada and the United States.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3230 Spain and Portugal, 1085 to 1668 F (3-0) [0.50]
The course examines the history of Spain and Portugal from the period of the reconquista to overseas expansion. The course covers the political, diplomatic, religious and cultural development of early modern Spain and Portugal and the rise of the overseas empire.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3240 Food History F (3-0) [0.50]
This course will examine the history of food and foodways from the early 19th century to the present. It will explore the impact of changing agricultural practices and the growth of the food processing industry, including the rise of nutritional science, and the impact on eating patterns.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3260 Cinema and the Moving Image F (3-0) [0.50]
This course provides a historical survey of cinema and the moving image, as well as the material, cultural, political and technological contexts of their production. Students will come to understand the broad development of the medium over the past one hundred and thirty years, beginning with early, pre-cinematic moving image technologies and ending with an analysis of the influence of other media and merchandizing on cinema. Students will also become familiar with crucial terminology for analyzing and writing about how films have been constructed and how they communicated to audiences over time.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3270 Revolution in the Modern World W (3-0) [0.50]
This course offers a comparative analysis of revolutionary movements in the modern world. It focuses on the French Revolution, the development of a revolutionary tradition in the 19th century, the Russian Revolution, and the Communist Revolution in China. Comparative themes include the relative importance of ideology and class conflict, the emergence of professional revolutionaries, and the relationship between revolutions and international relations.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3310 Disease and History U (2-0) [0.50]
This interdisciplinary course provides an introduction to the historical interactions between disease and human society from the Middle Ages to the present. Major themes may include the co-construction of disease and society; disease and urbanization; disease and colonialism; disease and globalization; disease and gender.

- **Offering(s):** Offered in even-numbered years.
- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3320 Modern China F (3-0) [0.50]
This course examines the history and culture of China since the nineteenth century. Topics may include economics, gender, imperialism, militarism, politics, and religion.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3330 The Scottish Diaspora W (3-0) [0.50]
The course offers a comprehensive overview of Scottish Diaspora history, focusing on a broad range of themes and settlement locations. Covering the period c.1750 to 1945, the historical geographies of the Scottish Diaspora explored include the 'near Diaspora' of England, Wales and Ireland; Continental Europe; the traditional settler Dominions; the United States; Africa; and Asia.

- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History

### HIST*3350 Modern Germany U (3-0) [0.50]
This course will be devoted to a study of major themes in modern German history, and to an analysis of Germany's role in post-war Europe. Topics include the unification of Germany, the role of nationalism in modern German history, the significance of the Bismarck era, the rise of Hitler and the development of the two Germanies until their unification in 1990.

- **Prerequisite(s):** 7.50 credits
- **Restriction(s):** HIST*2830 .
- **Department(s):** Department of History

### HIST*3360 History and Culture of Brazil W (3-0) [0.50]
This course will cover the history and culture of Brazil from its early indigenous civilizations to the present. Topics may include: European discovery and contact, the colonial era, slave trade and slavery, Dutch occupation, hybrid Afro-Christian religions, the Inquisition, independence, abolitionism, samba and carnival, dictatorships, soccer, favelas, and issues related to race, class, gender and the environment.

- **Offering(s):** Offered in odd-numbered years.
- **Prerequisite(s):** 7.50 credits
- **Department(s):** Department of History
XII. Course Descriptions, History

HIST*3380 British Imperialism in Asia and Africa F (3-0) [0.50]
This course examines the British Empire from the 18th through the 20th centuries. It focuses on: the empire in Asia and Africa; ideologies of empire; and European and non-European approaches and reactions to empire.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3410 Pre-Colonial Africa F (3-0) [0.50]
This course will include studies on the Ibo, Yoruba and Edo societies; on the Dahomey, Haussa, Western Congo and Angola states; and the effect of the Atlantic slave trade on African societies. Emphasis will be given to the householding system, lineage group organization, subsistence agriculture, and the sources of African History.
Prerequisite(s): 7.50 credits including (1 of HIST*1150, HIST*2340, HIST*2960) 
Department(s): Department of History

HIST*3440 The Global Sixties F (3-0) [0.50]
This course examines the political, social, and cultural history of one of the most important decades in the twentieth century: the sixties. It adopts global perspectives to ask how and why the sixties mattered in the development of the modern world. A diverse range of themes may be covered, from the political controversies stirred up by the Vietnam War, decolonisation in Africa, Mao's cultural revolution, the Cuban missile crisis, and the upheavals of 1968 to the social changes occasioned by the introduction of the birth control pill, the rise of The Beatles, and the emergence of television.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3450 The Uses of History U (2-1) [0.50]
As an introduction to the use of history outside the classroom, this course discusses public history and memory through the activities of governments, corporations, and voluntary associations. History as political propaganda, marketing strategy, and ideological support in a global and historical context is examined. Discussions will focus on history as presented in films, television, monuments, museums, commemorations, and other public and popular media.
Prerequisite(s): 7.50 credits including HIST*2450
Department(s): Department of History

HIST*3460 Natural Disasters in Global History W (3-0) [0.50]
The history of natural disasters offers insights into how the relationships between human societies and their natural environments have changed over time. Through a series of case studies, the course will trace the evolving history of natural disasters in global context from the late medieval period to the present. The course will address thematic issues including the construction of vulnerable landscapes and societies; the short-term impacts of disasters; changing patterns of disaster relief; and disasters and social change.
Prerequisite(s): 7.50 credits
Restriction(s): HIST*3430
Department(s): Department of History

HIST*3470 Independent Reading U (3-0) [0.50]
A course of independent study, based on a comprehensive reading list provided by the department. Evaluation will be based on two written examinations.
Prerequisite(s): 7.50 credits
Restriction(s): Instructor consent required.
Department(s): Department of History

HIST*3480 Workplace Learning U (0-0) [0.50]
An independent study course based on either History related voluntary or paid workplace experience. Evaluation will be based on assignments relating to work duties. These will usually be in the form of a weekly journal, and a major project relating to some specific aspect of the work experience. Students interested in this option must have their project approved by the department prior to the semester in which they plan to engage in their work experience. Students will then be assigned to a faculty supervisor who will oversee the project.
Prerequisite(s): 7.50 credits including 1.50 History or equivalent credits
Restriction(s): Instructor consent required.
Department(s): Department of History

HIST*3520 The Vikings: Early Medieval Encounters W (3-0) [0.50]
This course explores the topic of the Vikings in early medieval culture (700 - 1100). The focus will include the role of violence in early medieval society, the construction of the ‘Other’, as well as medieval and modern historiography. It provides students with enhanced knowledge of early medieval Europe, the Byzantine Empire and Russia.
Prerequisite(s): 7.50 credits including (HIST*2000 or HIST*2200)
Department(s): Department of History

HIST*3540 World War II W (3-0) [0.50]
This course is an in-depth analysis of the immediate causes and impact of the Second World War focusing on the influence of military events, on the social, political and economic developments of the major participating nations.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 7.50 credits including (2 of HIST*1150, HIST*2040, HIST*2100, HIST*2300, HIST*2500, HIST*2510, HIST*2601/2 , HIST*2600, HIST*2650 , HIST*2830, HIST*3350)
Department(s): Department of History

HIST*3570 Women in Modern Europe U (3-0) [0.50]
This course will examine selected topics in modern European women's history. Attention will be given to action in the public sphere, women's personal and family lives and occupations.
Prerequisite(s): 7.50 credits including (1 of HIST*2500, HIST*2510, HIST*2800, HIST*2930)
Department(s): Department of History

HIST*3580 Women's History in Asia U (3-0) [0.50]
This course examines the roles of women in one or more countries of Asia through the prisms offered by ideas of race, class, gender, social status, material culture, intellectual life, and ideology.
Prerequisite(s): 7.50 credits including (1 of HIST*1150, HIST*2800, HIST*2890, HIST*2910, HIST*2930)
Department(s): Department of History

HIST*3590 Ancient & Medieval India U (3-0) [0.50]
This course examines the history of India from the beginnings of civilization on the Indian subcontinent to the end of the Great Mughals in the 18th century. It provides an overview and analysis of the cultural, social, religious, political and economic development of Indian civilization, including development from tribe to state to civil society, political organization, socio-religious movements, cultural contact and exchange, and the development of a composite culture.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3600 Quebec and French Canada U (3-0) [0.50]
This course examines selected themes in the social, economic, political and cultural evolution of Quebec and its relations with the rest of Canada. The course may also examine the development of French Canadian and Acadian communities in other provinces.
Prerequisite(s): 7.50 credits including (HIST*2600 or POLS*2300)
Department(s): Department of History

HIST*3640 Madness and Psychiatry F (3-0) [0.50]
This course will explore madness and the history of psychiatry in the modern world. Topics may include the development of asylums, wild children and human nature, the rise and fall of hysteria, psychoanalysis, as well as ways in which psychiatry has related to imperialism, racial policies, sexuality, gender, religious beliefs, and war.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 7.50 credits
Department(s): Department of History

HIST*3660 Canadian Social History U (2-0) [0.50]
This course examines selected themes in the development of Canadian society such as the role of class, the social consequences of industrialization and urbanization, immigration, ethnicity and religion, education and culture.
Prerequisite(s): 7.50 credits including (HIST*2600 or HIST*2601/2 )
Department(s): Department of History

HIST*3690 Darwin, Culture and Society U (2-0) [0.50]
This course will focus on the historical, social, and cultural dimensions of Darwin’s theory of evolution, from the late 18th century to the present. Topics may include: natural history, classification, social Darwinism, race and imperialism, science & religion, science & literature, the eugenics movement, the Scopes trial, the modern evolutionary synthesis, sociobiology, gender, antievolutionism and creationism/intelligent design.
Prerequisite(s): 7.50 credits including ( ASCI*1000 or HIST*1250)
Department(s): Department of History

HIST*3750 The Reformation U (3-0) [0.50]
The changes in religious, social and cultural life in 16th century Europe will be discussed. This course will examine the impact of humanism, the developments in urban culture known as the Renaissance, the reform movements in central and western Europe, the Catholic response, and the resulting disintegration of the medieval social order.
Prerequisite(s): 7.50 credits including HIST*1010
Department(s): Department of History
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
<th>Restriction(s)</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST*3820</td>
<td>Early Modern France U (3-0)</td>
<td>0.50</td>
<td>Department of History</td>
<td></td>
<td>7.50 credits</td>
</tr>
<tr>
<td>HIST*3830</td>
<td>Modern Middle East W (3-0)</td>
<td>0.50</td>
<td>Department of History</td>
<td></td>
<td>7.50 credits</td>
</tr>
<tr>
<td>HIST*3840</td>
<td>Ottoman Empire, 1300-1923 W (3-0)</td>
<td>0.50</td>
<td>Department of History</td>
<td></td>
<td>7.50 credits</td>
</tr>
<tr>
<td>HIST*3910</td>
<td>Africa Since 1800 W (3-0)</td>
<td>0.50</td>
<td>Department of History</td>
<td></td>
<td>7.50 credits</td>
</tr>
<tr>
<td>HIST*4030</td>
<td>Historical Biography U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>7.50 credits</td>
</tr>
<tr>
<td>HIST*4040</td>
<td>Topics in Scottish History U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4090</td>
<td>Modern European History U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4100</td>
<td>Africa and the Slave Trades U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4120</td>
<td>Topics in Global History U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4140</td>
<td>Sexuality in the Middle Ages F (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4160</td>
<td>Seminar in Canadian Political History U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4170</td>
<td>Exploration of Digital Humanities W (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4180</td>
<td>American Identities F (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4200</td>
<td>Health, Mind and Body F (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
<tr>
<td>HIST*4220</td>
<td>Cities and Canadian Culture U (3-0)</td>
<td>1.00</td>
<td>Department of History</td>
<td></td>
<td>10.00 credits</td>
</tr>
</tbody>
</table>
### HIST*4270 Topics in Modern Asia W (3-0) [1.00]

This course will examine select topics in the development of Asian countries from the 18th to the 21st Century. Select themes including imperialism, nationalism, economics, society, and gender will be examined in a variety of Asian countries. (H)

**Prerequisite(s):** 10.00 credits including HIST*2910.

**Restriction(s):** HIST*4900 Instructor consent required.

**Department(s):** Department of History

### HIST*4280 Poverty and Policy in the Victorian Age U (3-0) [1.00]

Starting with the debates over the New Poor Law of 1834, this course will examine the changing content of the notion of poverty, and changing methods adopted to treat it. It will also look at the lives of the poor, in so far as these can be reconstructed from contemporary sources. (H)

**Prerequisite(s):** 10.00 credits including HIST*2500.

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4450 Life, Death and Migrations F (3-0) [1.00]

This seminar uses quantitative sources and methods to explore such themes as social inequality and demographic experience since 1800. It examines the value of such data for policy purposes, as well as the social and cultural contexts in which surveys are developed and undertaken. Students develop presentational and analytical skills through research projects. (H)

**Prerequisite(s):** 10.00 credits including HIST*2450, and at least 1.00 credits in History at the 3000 level or above.

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4470 Special History Project Seminar I U (3-0) [0.50]

This course is designed to train honours students in the techniques of research, interpretation and writing of history. The student will choose a topic for intensive study from a list approved by the department. (H)

**Prerequisite(s):** 10.00 credits

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts. Instructor consent required.

**Department(s):** Department of History

### HIST*4500 Topics in Revolution U (3-0) [1.00]

This seminar course is designed to explore one or more social or political or intellectual revolutions in the early modern or modern era depending on the expertise of the instructor. Students should consult the department for specific offerings. (H)

**Prerequisite(s):** 10.00 credits

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4560 Topics in Medieval History U (3-0) [1.00]

This seminar course provides a detailed analysis of selected aspects of the Middle Ages from c. XII to the 18th century. Students should consult the department for specific offerings. (H)

**Prerequisite(s):** 10.00 credits including (1 of HIST*2510, HIST*2820, HIST*3270, HIST*4580, HIST*4560)

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4600 The French Revolution U (3-0) [1.00]

This course provides an in-depth analysis of the French Revolution, 1789-1799, and the literature surrounding its interpretation. (H)

**Prerequisite(s):** 10.00 credits including (1 of HIST*2510, HIST*2820, HIST*3270, HIST*3820)

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4620 Seminar in Canadian Rural History U (3-0) [1.00]

This course will examine selected topics in the social and economic transformation of rural Canada with relevant comparisons to the rest of North America and elsewhere. (H)

**Prerequisite(s):** 10.00 credits including (HIST*2600 or HIST*2601/2 )

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4670 Seminar in Science and Society W (3-0) [1.00]

This course will discuss the way science is rooted in society and culture. It will explore the broad field of the history of science, the social role of the scientist, the impact of scientific methods, technology, machines and networks. Students will emerge with the ability to grapple with many of the challenges involved in rethinking the history of science in social and cultural terms. (H)

**Prerequisite(s):** 10.00 credits including 1 of ASCI*1000, HIST*1250, HIST*3690

**Restriction(s):** Restricted to students in the B.A. Honours or B.A.S. program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4820 Topics in Islamic History F (3-0) [1.00]

A seminar course designed to explore selected aspects of Islamic history and/or historiography. Students should consult the department for specific offerings. (H)

**Prerequisite(s):** 10.00 credits, (1 of HIST*2890, HIST*3830, HIST*3840, POLS*3060)

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4970 Topics in Medieval History U (3-0) [1.00]

This course provides a detailed analysis of selected aspects of the Middle Ages from c. 1000 through the early modern period. Students should consult the department for specific offerings. (H)

**Prerequisite(s):** 10.00 credits including HIST*2000 or HIST*2200

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts.

**Department(s):** Department of History

### HIST*4970 Special History Project Seminar II U (3-0) [0.50]

A continuation of HIST*4470. (H)

**Prerequisite(s):** 10.00 credits

**Restriction(s):** Restricted to students in the B.A. Honours program with a minimum of 70% average in all History course attempts. Instructor consent required.

**Department(s):** Department of History
# Horticultural Science

## HORT*1120 Grape and Wine Science W (3-0) [0.50]
This course will examine whole plant physiology as illustrated by the perennial system of a grapevine. Students will investigate all the primary functions of a green plant, with each function then related to a grapevine and how it functions in nature. Each function of the vine will be connected to the ultimate effects on fruit quality and by extension, wine quality throughout the course.

**Offering(s):** Offered through Distance Education format only.
**Restriction(s):** HORT*3430. Not acceptable for students in the BSC, BSC(Agr) or BSC(Env) programs.
**Department(s):** Department of Plant Agriculture

## HORT*1130 Science of Gardening F (3-0) [0.50]
This course examines the growth, development and physiology of horticultural species used for food and ornamental aesthetic purposes. The interaction between plants and impact of environmental factors as such as light, temperature, CO2 and humidity on plant processes will be emphasized.

**Restriction(s):** Not acceptable for students in the BSC, BSC(Agr) or BSC(Env) programs.
**Department(s):** Department of Plant Agriculture

## HORT*2450 Introduction to Turfgrass Science F (3-2) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>BIOL<em>1040 or [BIOL</em>1090, (1 of BIOL<em>1050, BIOL</em>1070, BIOL*1080)]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restriction(s):</strong></td>
<td>HORT*3220</td>
</tr>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3010 Annual, Perennial and Indoor Plants - Identification and Use F (2-2) [0.50]
This course focuses on the identification and adaptation of annual, biennial, perennial herbaceous and indoor plants. Lectures will be integrated with outdoor laboratory activities to emphasize utilization of plant groups in park, perennial border, general landscape, botanic garden and interiorscape settings.

**Offering(s):** Offered in odd-numbered years.
**Prerequisite(s):** 1 of AGR*2470, LARC*2240, 0.50 credits in botany
**Department(s):** Department of Plant Agriculture

## HORT*3050 Management of Turfgrass Insect Pests and Weeds F (3-2) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>AGR<em>2470, LARC</em>2240, 0.50 credits in botany</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restriction(s):</strong></td>
<td>DTM*3300</td>
</tr>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3150 Principles and Applications of Plant Propagation F (2-2) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>AGR<em>2470 or BOT</em>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restriction(s):</strong></td>
<td>HORT<em>3230, HORT</em>3350</td>
</tr>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3270 Medicinal Plants W (3-0) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 of BIOL<em>1050, BIOL</em>1070, BIOL*1080</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3280 Greenhouse Production W (3-3) [0.50]
This course examines the principles and practices of production, culture and marketing of greenhouse flower and vegetable crops.

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 of AGR<em>2050, AGR</em>2470, BOT*2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3340 Wine-Grape Culture W (3-0) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>AGR<em>2470 or BOT</em>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*3510 Vegetable Production F (3-3) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 of AGR<em>2050, AGR</em>2470, BOT*2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*4200 Plants, the Environment and Society W (3-0) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 (of AGR<em>2470, BOT</em>2100, ENV<em>2330, LARC</em>2240)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*4300 Postharvest Physiology W (3-3) [0.50]

An examination and discussion of physiological and biochemical processes unique to postharvest development and deterioration. Principles and practices of storing fruits, vegetables, and florists' and nursery stocks as well as marketing pathways for horticultural crops will be considered.

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>BOT<em>3310 or PBIO</em>3110</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*4380 Tropical and Sub-Tropical Crops F (3-0) [0.50]

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 of AGR<em>2470, BOT</em>2100, (AGR<em>2050, AGR</em>2150)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*4420 Fruit Crops F (3-3) [0.50]

Growth patterns, fruiting characteristics and adaptation to environmental conditions of fruit crops in temperate regions will be presented. Classification, cultural practices including propagation and the physiological principles underlying these practices will be emphasized.

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>1 of AGR<em>2050, AGR</em>2470, BOT*2100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

## HORT*4450 Advanced Turfgrass Science W (3-2) [0.50]

This course emphasizes on plant stressors and physiological responses of plants to stress. Interactions between the soil system, the plant and the environment are considered, with focus on how soil physical, chemical and biological properties as well as environmental factors affect turfgrass plant health and physiology. Principles and strategies of biological control, cultural practices that affect plant health, pest life cycles and pest population levels are addressed in order to develop integrated management plans for turf aimed at reducing pest levels in an environmentally benign manner.

<table>
<thead>
<tr>
<th>Prerequisite(s):</th>
<th>AGR<em>2050 or AGR</em>2470</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department(s):</strong></td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>
Hospitality and Tourism Management

School of Hospitality, Food and Tourism Management.

HTM*1000 Introduction to Hospitality and Tourism Management F (3-0) [0.50]
This course provides an overview of the hospitality and tourism industry. Students will be introduced to the history, growth, and organization of industry sectors such as hotels, restaurants, bars, country clubs, rental car agencies and airlines.

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT or UND, BA:EURS, Area of Emphasis in European Business.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2010 Hospitality and Tourism Business Communications F,W (3-0) [0.50]
This course is designed to enhance students' confidence and professionalism in the hospitality and tourism industry by improving their communication skills. The focus is primarily on writing, but also includes effective speaking and presentation skills. The assignments are based on hospitality and tourism issues.

Prerequisite(s): HTM*1000

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2030 Control Systems in the Hospitality Industry F,W (4-0) [0.50]
This is a study of the policies and procedures required to control food, beverage and other products, payroll and other operating costs. Areas examined include such topics as cost behaviour and analysis, menu analysis, budget preparation and the interpretation of data. The course will also stress the application of analytical techniques. Examples from all industry segments will be used.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): HTM*2000 or HTM*2700

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT, BASC:AHN.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2070 Event Management W (3-0) [0.50]
This course takes a holistic approach to the sales, servicing and management of the meetings, events, conventions, exhibitions, and incentive travel industries. Emphasis is placed on both the supply (product and service providers) and demand (meeting and event managers) elements of the industry. The course focuses on the unique operational and managerial functions of a significant sector of the tourism and hospitality industry.

Prerequisite(s): HTM*1000

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2100 Lodging Operations W (3-0) [0.50]
This course introduces the lodging industry with the inclusion of terminology, organizational structures, and departmental responsibilities. The current global structure of the lodging environment including an analysis of major organizations and forecasts the future of lodging with a reliance on a critical analysis of existing studies, consulting reports, and up-to-date lodging news is covered. Decision-making from the role of a lodging manager is investigated with a focus on safety, security, profitability, and ethical management.

Prerequisite(s): HTM*1000

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2170 Responsible Tourism Policy and Planning F (3-0) [0.50]
This course focuses on the various aspects of tourism policy, planning and development with a heavy emphasis on responsible choices. Tourism is reviewed in a global context, and its role (both positive and negative) in socio-economic development, poverty alleviation, climate change, and other topics of current importance is explored.

Prerequisite(s): 4.00 credits

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2700 Understanding Foods F,W (3-2) [0.50]
This course explores the chemistry behind food preparation, handling and food safety; and the impact of different cooking methods on the colour, flavour and texture of food. Students will apply knowledge by cooking and assessing a series of prepared products.

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT, BASC:AHN.

Department(s): School of Hospitality, Food and Tourism Management

HTM*2740 Cultural Aspects of Food F (3-0) [0.50]
Students are provided with an opportunity to learn about numerous cultural factors that influence food selection, preparation, and consumption patterns. Food history, religions, geographic location and culture are studied to develop an understanding of the impact of these factors on food related behaviours.

Prerequisite(s): 2.00 credits

Department(s): School of Hospitality, Food and Tourism Management

HTM*3030 Beverage Management F (2-2) [0.50]
Students will examine the beverage industry, including bottled water, energy drinks, coffee, tea and alcoholic beverages. In addition to the laws regulating production, labelling and marketing of these products, the course discusses the active components of beverages and their impact on the human body, consumption risks and recommended uses.

Prerequisite(s): 9.00 credits

Restriction(s): Students must be of legal drinking age in Ontario. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.

Department(s): School of Hospitality, Food and Tourism Management

HTM*3060 Lodging Management F (3-0) [0.50]
This course explores the principles and practices of lodging management and related activities. The management of and interaction among various divisions of lodging operations are addressed, including general management, front office/housekeeping/engineering divisions, food and beverage operations, sales and marketing, accounting and finance. The focus of the course is on communication within and among departments, divisions, and with the consumer.

Prerequisite(s): 9.00 credits including HTM*2010, HTM*2100

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management

HTM*3080 Marketing Strategy for Hospitality Managers F,W (3-0) [0.50]
This course focuses on major marketing decisions that hospitality managers face in generating and sustaining demand for their products and services through creating value for, and establishing strong relationships with their customers. Course content covers key elements of strategic marketing including, segmentation and target marketing, positioning and branding, pricing, promotions, personal selling, and distribution system decisions within the context of the hospitality and tourism industry.

Prerequisite(s): 9.00 credits including HTM*2010, (HTM*2120 or MCS*1000)

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management

HTM*3090 Restaurant Operations Management F,W (2-4) [1.00]
This course covers the application of managerial functions to restaurant and foodservice operations with the emphasis on teamwork and the principles of food production and service in a sustainable commercial restaurant setting. Students gain hands-on understanding of scheduling, purchasing, costing, nutritional analysis, and food safety while operating a student run restaurant.

Prerequisite(s): HTM*2030, HTM*2700

Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT, BASC:AHN.

Department(s): School of Hospitality, Food and Tourism Management

HTM*3120 Service Operations Analysis F,W (3-0) [0.50]
This course presents an overview of strategic analysis of operations management in service industries. Tools and concepts are introduced for planning and evaluating initiatives to support service design, productivity and delivery. Topics include layout, location, productivity, service design and yield management while further developing excel skills in analytical contexts.

Prerequisite(s): (ACCT*1220 or ACCT*2220), (1 of ECON*2740, PSYC*1010, STAT*2040, STAT*2060, STAT*2080)

Restriction(s): FARE*3310. Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.

Department(s): School of Hospitality, Food and Tourism Management
HTM*3150 Experiential Learning in the Hospitality and Tourism Industry F,W (3-0) [0.50]
This course prepares students for careers as leaders in the hospitality and tourism industry. Students are asked to reflect and integrate their academic studies with relevant work experience. Career planning and preparation is facilitated through the use of self-awareness exercises and self-assessment tools.
Prerequisite(s): 14.00 credits and a minimum of 700 hours of verified work experience in the hospitality and tourism industry.
Restriction(s): Registration in BCOMM: HAFA, HAFA:C or TMGT Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

HTM*3160 Destination Management and Marketing F (3-0) [0.50]
This course examines the attractiveness of communities (urban and rural; domestic and international) for visitors and the implications that result from the development of a tourism industry. Methods to encourage visitation are explored as are the attempts to create and manage the development of the community and the tourism industry in a sustainable manner.
Prerequisite(s): HTM*2170
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT, BA:EURS Area of Emphasis in European Business.
Department(s): School of Hospitality, Food and Tourism Management

HTM*3180 Casino Operations Management U (0-0) [0.50]
This course examines the application of business management principles and procedures within casinos. Major topics include: the global and Canadian casino industries, regulation and control, casino accounting and statistics, casino marketing, security and surveillance, human resources, customer service, and specific casino operational management components.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): (1 of BUS*2090, HROB*2100, HTM*2200 ), (1 of ACCT*2230, AGEC*2230, BUS*2230, HTM*3070 )
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): School of Hospitality, Food and Tourism Management

HTM*3780 Managing Food in Canada F (3-0) [0.50]
This course provides an introduction to the Canadian food system. The subjects of global trade, supply chain management, food legislation and regulation, food safety, consumer food-related behaviour, and food product development are studied to develop an understanding of how they impact the Canadian food system and its functionality.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 1 of FOOD*2010, HTM*2700, MCS*1000
Restriction(s): AGR*1110 FARE*1400
Department(s): School of Hospitality, Food and Tourism Management

HTM*4050 Wine and Oenology W (2-2) [0.50]
This course provides students with knowledge about the wine industry and will emphasize knowledge about product, purchasing, pricing, and service.
Prerequisite(s): 9.00 credits
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT. Students must be of legal drinking age in Ontario.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4090 Hospitality Development, Design and Sustainability F (3-0) [0.50]
This course focuses on the development, design and management of the hospitality built environment. It explores issues related to the planning and development of hospitality properties, provides an introduction to property and asset management as related to the hospitality industry, and examines universal design as applied to the ‘servescapes’, all within the broad context of sustainability.
Prerequisite(s): 14.00 credits including HTM*1000
Restriction(s): REAL*3890
Department(s): School of Hospitality, Food and Tourism Management

HTM*4110 Advanced Restaurant Operations U (1-7) [0.50]
This course focuses on the management and operation of fine dining events. Emphasis is placed on event planning and creativity in menu formulation, operational performance, and guest satisfaction. This includes ambience, total service and the dynamic relationship between service and the product of food and wine.
Prerequisite(s): HTM*3090
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4130 Current Management Topics U (3-0) [0.50]
Principal operating problems in the hospitality and tourism industry are analyzed and discussed using actual case studies. Students should check with the School of Hospitality, Food and Tourism Management to determine what topic will be offered during specific semesters, and which prerequisites, if any, are appropriate.
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT. Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4140 Current Management Topics U (3-0) [0.50]
Operating problems in the hospitality and tourism industry are analyzed and discussed. Students should check with the School of Hospitality, Food and Tourism Management to determine what topic will be offered during specific semesters, and which prerequisites, if any, are appropriate.
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT. Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4150 Current Management Topics U (3-0) [0.50]
Operating problems in the hospitality and tourism industry are analyzed and discussed. Students should check with the School of Hospitality, Food and Tourism Management to determine what topic will be offered during specific semesters, and which prerequisites, if any, are appropriate.
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT. Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4170 International Tourism W (3-0) [0.50]
This course encourages students to develop a cross-cultural awareness of the dimensions and issues of tourism, and the trends that shape the various sectors of the industry in every region of the world. Students will gain knowledge of the social, political and economic impacts of tourism globally, the patterns of international travel, regional development and marketing implications.
Prerequisite(s): 14.00 credits including HTM*3160
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT, BA:EURS Area of Emphasis in European Business.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4190 Hospitality and Tourism Industry Consultation F,W (3-0) [0.50]
A project-based course that requires students to take a ‘systems-thinking’ approach to studying current business problems faced by hospitality and tourism organizations. Students are asked to identify issues, determine context, and use evidence-based research and analysis to provide alternative courses of action and recommendations for actual hospitality businesses.
Prerequisite(s): (ACCT*2230 or HTM*3070 ), HTM*3080
Co-requisite(s): MGMT*3320
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4250 Hospitality Revenue Management F,W (3-0) [0.50]
This course is an advanced exploration of revenue management concepts, tools and application. The objective of the course is to provide a solid foundation in revenue management for careers in tourism, services, and hospitality management.
Prerequisite(s): FARE*3310 or HTM*3120
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4300 Co-operative Education Seminar F (3-0) [0.50]
An integration of the students’ academic studies with their work semester experiences provided by the co-operative program. Emphasis will be placed on students critically evaluating the application of theoretical concepts in different working environments.
Prerequisite(s): Registration in semester 7 of BCOMM:HAFA:C.
Department(s): School of Hospitality, Food and Tourism Management

HTM*4500 Special Study in Hospitality and Tourism U (3-0) [0.50]
The special study option is designed to provide senior undergraduate students with an opportunity to pursue an independent course of study. The topic selected will be determined by agreement between the student and the faculty member with expertise in the area.
Restriction(s): Registration in BCOMM:HAFA, BCOMM:HAFA:C or BCOMM:TMGT. Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

Department(s): School of Hospitality, Food and Tourism Management
Human Resources and Organizational Behaviour
Department of Management- College of Business and Economics

**HROB*2010 Foundations of Leadership F,W (3-0) [0.50]**
Using an integrated approach to studying leadership, this foundation course covers history, evolving theories, models, and research both from a theoretical point of view and practical application. This course will use a seminar style with applied workshops, class discussions, guest speakers, and student participation. Students will prepare elements of a skills portfolio and a research paper. This is a required course for the Certificate in Leadership.

**Offering(s):** Also offered through Distance Education format.
**Equate(s):** BUS*2100
**Restriction(s):** UNIV*2000
**Department(s):** Department of Management

**HROB*2090 Individuals and Groups in Organizations F,W (3-0) [0.50]**
The course serves as an overview to organizational behaviour. It examines the individual, the group, the organization and how the three interrelate in order to enhance performance and productivity. (Also offered through Distance Education format.)

**Equate(s):**

**Restriction(s):**

**Department(s):** Department of Management

**HROB*2100 Managing People in Organizations F,W (3-0) [1.00]**
This course will use an integrative approach to help you to understand, predict and influence how individuals behave at work. In addition, students will be provided with the tools to attract, select and retain the right employees, while recognizing the role of the organization’s culture and strategy and the impact of external forces. This course will use Human Resource Management practices to illustrate the importance of understanding Organisational Behavioural Theories. Many real world examples will be used to provide a relevant and rich learning experience.

**Prerequisite(s):**
2.00 credits

**Restriction(s):**
BUS*2090, BUS*3000, BUS*4000, PSYC*3080

**Department(s):** Department of Management

**External Course Code(s):**

**HROB*3000 Human Resources Management F,W (3-0) [0.50]**
This course examines the essential human resource function of planning, staffing, employee training and development, employee assistance programs, the legal environment and employee maintenance in a variety of organizational settings.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):**
1 of ACCT*1220, ACCT*2220, BUS*2090, BUS*2220, HROB*2090

**Equate(s):**
BUS*3000

**Restriction(s):**
HROB*2100, PSYC*3070 This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):** Department of Management

**HROB*3010 Managing and Rewarding Performance F (3-0) [0.50]**
This course focuses on how organizations attract, retain, and motivate employees through formal and informal reward mechanisms. Topics include: developing pay structures, job analysis, job evaluation, pay systems, pay system administration, equity issues, and benefits.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):**
1 of BUS*3000, HROB*2100, PSYC*3070

**Equate(s):**
BUS*3010, PSYC*3010

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):** Department of Management

**HROB*3030 Workplace Health and Safety W (3-0) [0.50]**
The major objective of this course is to introduce Human Resources Professionals to this broad and ever changing field. Occupational Health and Safety, is an inherently technical subject far broader than legislation only. The multiple dimensions of the various issues - technical, legislative, political and personal are a required part of the training for a professional in this field.

**Prerequisite(s):**
9.00 credits including (1 of BUS*3000, HROB*2100, PSYC*3070)

**Equate(s):**
BUS*3030, PSYC*3060

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):** Department of Management

**HROB*3050 Employment Law F (3-0) [0.50]**
This course will introduce students to Canadian employment law, specifically rules that govern the relationships between employees and employers. Subject areas will include the history of employment law, employment contracts, creation and modification of the employment relationship, employer and employee obligations, employment standards, human rights legislation and termination. International comparisons will also be examined.

**Prerequisite(s):**
9.00 credits including (1 of BUS*3000, HROB*2100, PSYC*3070)

**Restriction(s):** Restricted to students in BCOMM, BASC: AHN, and BA: EURS.

**Department(s):** Department of Management

**HROB*3070 Attracting and Acquiring Talent F (3-0) [0.50]**
This course will provide students with the appropriate tools needed to recruit and select employees, identify related competencies, identify performance appraisal methods, and evaluate the effectiveness of these programs within the context of our Canadian legal framework.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):**
1 of BUS*3000, HROB*2100, PSYC*3070

**Equate(s):**
BUS*3070

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):** Department of Management

**HROB*3090 Developing Talent W (3-0) [0.50]**
This course focuses on how organizations develop employee skills through training and development programs. Topics will include: adult learning principles, training needs assessments, training program design, instructional methodologies, coaching and mentoring, individualized development and program evaluation.

**Prerequisite(s):**
1 of BUS*3000, HROB*2100, PSYC*3070

**Equate(s):**
BUS*3090, PSYC*3090

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):** Department of Management

**HROB*3100 Developing Management and Leadership Competencies F,W (3-0) [0.50]**
This course is designed to help students develop critical managerial skills such as self-awareness, managing conflict and stress, communicating effectively, and interviewing.

**Prerequisite(s):**
9.00 credits including (1 of BUS*3000, HROB*2100, PSYC*3070)

**Restriction(s):** BUS*4000, HTM*4100

**Department(s):** Department of Management

**HROB*4000 Leadership and Organizational Management Capstone W (3-0) [0.50]**
This course examines the management of human resources from a strategic perspective, focusing on how organizations can achieve competitive advantage through their people. Students will be challenged to integrate their knowledge of organizational behaviour and the various human resource functions to develop strategic solutions to organizational issues.

**Prerequisite(s):**
HROB*4100

**Department(s):** Department of Management

**HROB*4010 Leadership Certificate Capstone W (3-0) [0.50]**
This course is the capstone course for students completing the Certificate in Leadership. Based on their prior course work and experience in their leadership placements, students will examine the relationships between leadership theory and practice, assess their effectiveness in a leadership role, and develop a personal plan for further developing their leadership skills.

**Offering(s):** Offered through Distance Education format only.

**Prerequisite(s):**
1 of BUS*2010 or HROB*2010 plus 120 hours of placement experience

**Equate(s):**
BUS*4010, UNIV*4000

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Management
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HROB*4030</td>
<td>Advanced Topics In Leadership and Organizational Management U (3-0) [0.50]</td>
<td></td>
<td>Students will actively examine issues in selected topic areas of human resource management at an advanced level and with a focus on application in an actual organizational setting. The focal area of the course, or range of human resource management topics covered by the course, will vary depending on instructor. Selected topic areas may include corporate social responsibility, leadership issues, strategic human resource management, gender issues, human rights issues, recruitment methods and outcomes, functional job analysis and validation methods, job performance criteria and appraisal tools, selection processes and tools, organizational justice, work attitudes, and prejudice and discrimination in the workplace. Specific topic areas will be announced prior to the course selection period.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s):</td>
<td>12.50</td>
<td>credits including (1 of BUS<em>3000 , HROB</em>2100, PSYC*3070)</td>
</tr>
<tr>
<td></td>
<td>Equate(s):</td>
<td>BUS*4030</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department(s):</td>
<td></td>
<td>Department of Management</td>
</tr>
<tr>
<td>HROB*4060</td>
<td>Workforce Optimization W (3-0) [0.50]</td>
<td></td>
<td>This course introduces the strategic planning role that human resources professionals play in organizations. Students will confront the challenges and demands of rightsizing, technological change, corporate repositioning, cost containment, productivity improvements, and the consequences of relocation, outplacement and retraining of staff. An understanding of the essential elements of the human resource planning process in organizations will be provided. Students will acquire knowledge in analyzing, assessing and programming for the human resource requirements of organizational, business and strategic plans.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s):</td>
<td>15.00</td>
<td>credits including (1 of BUS<em>3000 , HROB</em>2100, PSYC*3070)</td>
</tr>
<tr>
<td></td>
<td>Equate(s):</td>
<td>BUS*4060</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restriction(s):</td>
<td></td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
</tr>
<tr>
<td></td>
<td>Department(s):</td>
<td></td>
<td>Department of Management</td>
</tr>
<tr>
<td>HROB*4100</td>
<td>Evidence-Based People Management F (3-0) [1.00]</td>
<td></td>
<td>This course provides students with the opportunity to conduct hands-on research in an organization on issues that relate to Human Resource Management. Students will work in groups and be expected to find organizations for their research project. Although students will be primarily accountable for finding their organizations to work with, instructor support will be provided to assist students if difficulties arise. The instructor will also serve as a resource throughout the project. Lecture topics include: understanding organizational issues, understanding the consulting process (e.g. engagement, communication, ethics), project planning, data collection methods in an applied context (e.g. sampling, confidentiality, practical constraints), and report writing.</td>
</tr>
<tr>
<td></td>
<td>Prerequisite(s):</td>
<td>12.50</td>
<td>credits including (1 of BUS<em>3000 , HROB</em>2100, PSYC*3070)</td>
</tr>
<tr>
<td></td>
<td>Equate(s):</td>
<td>BUS*4100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restriction(s):</td>
<td></td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
</tr>
<tr>
<td></td>
<td>Department(s):</td>
<td></td>
<td>Department of Management</td>
</tr>
</tbody>
</table>
Human Kinetics

Department of Human Health and Nutritional Sciences

HK*2270 Principles of Human Biomechanics F (3-1) [0.50]
This course will address the application of mechanical principles to the study of human movement. Topics will include: motion analysis techniques, anthropometrics, biological tissue tolerance, muscle force generation, static and dynamic equilibrium, work/energy and impulse/momentum as they apply to the description of motion, injury to musculoskeletal tissues and optimization of human performance.
Prerequisite(s): 4.00 credits including BIOL*1090, (PHYS*1000 or PHYS*1080)
Department(s): Department of Human Health and Nutritional Sciences

HK*2810 Human Physiology I - Concepts and Principles W (3-0) [0.50]
This course will introduce the fundamental concepts and principles of communication systems (transport, ion movement, nerve and synapse, muscle) in humans. It will focus on primary physiological communication systems, such as the endocrine and central nervous systems, and integrate basic principles to understand larger systems such as the gastrointestinal tract.
Prerequisite(s): BIOC*2580, BIOL*1080
Restriction(s): HK*3940
Department(s): Department of Human Health and Nutritional Sciences

HK*3100 Neuromuscular Physiology W (3-0) [0.50]
Normal muscle movement is controlled by the motor cortex or by reflexes within the context of the sensory environment. This course will introduce key concepts in motor control of mammalian, human movement, coordination of movement, motor program selection, motor program execution, motor unit recruitment, skeletal muscle excitation-contraction coupling. This course is required for students wishing to gain certification by the Ontario Kinesiology Association.
Prerequisite(s): 1 of BIOM*3200, HK*3810, HK*3940, ZOO*3200, ZOO*3600
Restriction(s): Restricted to B.Sc., Major in Human Kinetics or Neuroscience Minor.
Department(s): Department of Human Health and Nutritional Sciences

HK*3401 Human Anatomy: Dissection F (3-3) [0.75]
First part of the two-semester course HK*3401/2. Refer to HK*3401/2 for course description.
Co-requisite(s): HK*3810 or HK*3940
Restriction(s): HK*3501/2. Registration in the B.Sc. Major in Human Kinetics or Bio-Medical Science.
Department(s): Department of Human Health and Nutritional Sciences

HK*3401/2 Human Anatomy: Dissection F-W [1.50]
A two-semester lecture and laboratory course in human anatomy which includes a detailed study of the skeleton, upper and lower limbs, thorax, abdomen, pelvis, perineum, head, neck and central nervous system. The labs involve hands-on dissection. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*3401 in the Fall semester and HK*3402 in the Winter semester. A grade will not be assigned to HK*3401 until HK*3402 has been completed.
Co-requisite(s): HK*3810 or HK*3940
Restriction(s): HK*3501/2. Registration in the B.Sc. Major in Human Kinetics or Bio-Medical Science.
Department(s): Department of Human Health and Nutritional Sciences

HK*3402 Human Anatomy: Dissection W (3-3) [0.75]
Second part of the two-semester course HK*3401/2. Refer to HK*3401/2 for course description.
Prerequisite(s): HK*3401
Department(s): Department of Human Health and Nutritional Sciences

HK*3501 Human Anatomy: Prosection F (3-2) [0.75]
First part of the two-semester course HK*3501/2. Refer to HK*3501/2 for course description.
Co-requisite(s): HK*3810 or HK*3940
Restriction(s): HK*3401/2. Registration in the B.Sc. Major in Human Kinetics or Bio-Medical Science. Instructor consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*3501/2 Human Anatomy: Prosection F-W [1.50]
A two-semester lecture and laboratory course in human anatomy which includes a detailed study of the skeleton, upper and lower limbs, thorax, abdomen, pelvis, perineum, head, neck and central nervous system. Labs involve observation of anatomical details using prosections and dissected specimens. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*3501 in the Fall semester and HK*3502 in the Winter semester. A grade will not be assigned to HK*3501 until HK*3502 has been completed.
Co-requisite(s): HK*3810 or HK*3940
Restriction(s): HK*3401/2. Registration in the B.Sc. Major in Human Kinetics or Bio-Medical Science. Instructor consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*3502 Human Anatomy W (3-2) [0.75]
Second part of the two-semester course HK*3501/2. Refer to HK*3501/2 for course description.
Prerequisite(s): HK*3501
Department(s): Department of Human Health and Nutritional Sciences

HK*3600 Applied Human Kinetics I F (3-3) [0.75]
This course covers laboratory techniques which are central to human biology, together with their underlying concepts. Human performance and function are evaluated through cellular, organic, systemic and whole person studies. The student's technical competence and conceptual understanding are emphasized.
Prerequisite(s): HK*2270
Co-requisite(s): HK*3810 or HK*3940
Restriction(s): Registration in the Human Kinetics major.
Department(s): Department of Human Health and Nutritional Sciences

HK*3810 Human Physiology II - Integrated Systems F (4-0) [0.75]
This course will build on the fundamental concepts and principles of communication systems developed in Human Physiology I and examine more complex physiological phenomena such as the control of blood volume and blood pressure, which integrates tissue of the cardiovascular system, the heart, vasculature and kidney, and acid-based physiology, which integrates the respiratory system and the kidney. Finally, all systems will be integrated to determine how the body responds to challenges such as altitude, exercise and shock (blood loss).
Offering(s): First offering - Fall 2016
Prerequisite(s): HK*2810
Restriction(s): HK*3940
Department(s): Department of Human Health and Nutritional Sciences

HK*4070 Clinical Biomechanics W (3-2) [0.50]
This course covers functional anatomy, neurophysiology and mechanical characteristics of humans at the tissues and whole-body levels. Pathomechanics of human movement resultant from disease, abuse or trauma will be examined. Special emphasis will be placed on etiology, testing and correction of functional disorders with special reference to balance, gait and orthopaedic biomechanics.
Prerequisite(s): ENGG*2660 or (HK*2270, HK*3600)
Department(s): Department of Human Health and Nutritional Sciences

HK*4230 Advanced Study in Human Health and Nutritional Sciences S,F,W (3-0) [0.50]
The student will conduct independent literature research of an approved topic to be decided by the student in consultation with a faculty advisor. Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.
Prerequisite(s): 12.00 credits
Restriction(s): Course coordinator consent required.
Department(s): Department of Human Health and Nutritional Sciences

HK*4240 Occupational Biomechanics and Ergonomics W (3-2) [0.75]
This course introduces the methods available for reducing musculoskeletal injuries in the workplace. Topics include: biomechanical, psychophysical, physiological, and integrated approaches to performing physical demands analyses, anatomy and etiology of low back injuries and upper limb disorders, principles of redesigning tasks to reduce the risk of injury, pre-employment screening and legislated guidelines. Students apply the course material to ergonomic assessments performed in industrial environments.
Prerequisite(s): ENGG*1210 or HK*3600
Department(s): Department of Human Health and Nutritional Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK*4340</td>
<td>Genomics: Exercise and Disease</td>
<td>3-0</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HK*4341 Advanced Study in Human Anatomy</td>
<td>1-10</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4342 Advanced Study in Human Anatomy</td>
<td>1-10</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*43460 Research in Human Health and Nutritional Sciences</td>
<td>0-12</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4371 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4372 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4371/2 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4371/2 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4372 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4372 Research in Human Health and Nutritional Sciences</td>
<td>0-6</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4441 Advanced Study in Human Anatomy</td>
<td>1-10</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4442 Advanced Study in Human Anatomy</td>
<td>1-10</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*44460 Regulation of Human Metabolism</td>
<td>3-0</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
<tr>
<td>HK*4450 Teaching, Learning &amp; Knowledge Transfer</td>
<td>0-12</td>
<td>Department of Human Health and Nutritional Sciences</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

**HK*4340 Genomics: Exercise and Disease**

This course is an in-depth examination of how exercise 1) effects gene transcription to influence elite performance (ie. training for sport) and 2) can be used as a therapeutic strategy to influence the expression of specific genes to recover the health of an individual (ie. exercising for health). The course represents a unique opportunity to understand the beneficial effects of physical activity and exercise at the genetic level.

**Prerequisite(s):** NUTR*3360

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4341 Advanced Study in Human Anatomy**

First part of the two-semester course HK*4441/2. This course will provide students who have completed HK*3401/2 with the opportunity to pursue anatomical studies in an interdisciplinary fashion at the advanced level. Students will use their knowledge in anatomy to develop educational material and/or teach anatomical concepts and applications of human anatomy. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*4441 in the first semester and HK*4442 in the second semester. A grade will not be assigned to HK*4441 until HK*4442 has been completed. Students must make arrangements with the course coordinator at least one semester in advance, and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** HK*3402, (HK*3810 or HK*3940)

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4342 Advanced Study in Human Anatomy**

Second part of the two-semester course HK*4441/2. This course will provide students who have completed HK*3401/2 with the opportunity to pursue anatomical studies in an interdisciplinary fashion at the advanced level. Students will use their knowledge in anatomy to develop educational material and/or teach anatomical concepts and applications of human anatomy. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*4441 in the first semester and HK*4442 in the second semester. A grade will not be assigned to HK*4441 until HK*4442 has been completed. Students must make arrangements with the course coordinator at least one semester in advance, and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** HK*3402, (HK*3810 or HK*3940)

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4371 Research in Human Health and Nutritional Sciences**

First part of the two-semester course HK*4371/2. The student will select a research topic and design and complete a project in an area of interest, in consultation with a faculty advisor. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*4371 in the first semester and HK*4372 in the second semester. A grade will not be assigned to HK*4371 until HK*4372 has been completed. Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** 12.00 credits

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4372 Research in Human Health and Nutritional Sciences**

Second part of the two-semester course HK*4371/2. The student will select a research topic and design and complete a project in an area of interest, in consultation with a faculty advisor. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*4371 in the first semester and HK*4372 in the second semester. A grade will not be assigned to HK*4371 until HK*4372 has been completed. Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** 12.00 credits

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4372 Research in Human Health and Nutritional Sciences**

Second part of the two-semester course HK*4371/2. The student will select a research topic and design and complete a project in an area of interest, in consultation with a faculty advisor. This is a two-semester course offered over consecutive semesters. When you select it you must select HK*4371 in the first semester and HK*4372 in the second semester. A grade will not be assigned to HK*4371 until HK*4372 has been completed. Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** HK*4371

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*44460 Regulation of Human Metabolism**

The course focuses on the underlying metabolic events that occur in association with exercise. Skeletal muscle metabolism and substrate delivery are discussed with respect to the intracellular biochemical events integrated with both the endocrine and the chemical aspects of neural mechanisms.

**Prerequisite(s):** (HK*3810 or HK*3940), NUTR*4210

**Department(s):** Department of Human Health and Nutritional Sciences

**HK*4450 Teaching, Learning & Knowledge Transfer**

In consultation with a faculty advisor, the student will select, design and complete an independent project on the scholarship of teaching, learning and/or knowledge transfer in human health. Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.

**Prerequisite(s):** 10.00 credits including BIOL*1080

**Restriction(s):** Course coordinator consent required.

**Department(s):** Department of Human Health and Nutritional Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK*4511 Teaching, Learning &amp; Knowledge Transfer II S,F,W (0-6) [0.50]</td>
<td>First part of a two-semester course HK<em>4511/2. In consultation with a faculty advisor, the student will select, design and complete an independent project on the scholarship of teaching, learning and/or knowledge transfer in human health. This is a two-semester course offered over consecutive semesters; when you select it you must select HK</em>4511 in the first semester and HK<em>4512 in the second semester (a grade will not be assigned to HK</em>4511 until HK*4512 has been completed). Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.</td>
<td>10.00</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HK*4512 Teaching, Learning &amp; Knowledge Transfer II S,F,W (0-6) [1.00]</td>
<td>In consultation with a faculty advisor, the student will select, design and complete an independent project on the scholarship of teaching, learning and/or knowledge transfer in human health. This is a two-semester course offered over consecutive semesters; when you select it you must select HK<em>4511 in the first semester and HK</em>4512 in the second semester (a grade will not be assigned to HK<em>4511 until HK</em>4512 has been completed). Students must make arrangements with both a faculty advisor and the course coordinator at least one semester in advance and the signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from the course coordinator and submitted no later than the second class day of the semester in which the student is registered for the course.</td>
<td>10.00</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HK*4550 Human Cardio-respiratory Physiology F (3-0) [0.50]</td>
<td>The central focus of this course is a comprehensive examination of the effects of a variety of work parameters on normal cardio-respiratory adjustments required to meet metabolic demands. Immediate adjustments to increase metabolic rate as well as long term cardio-respiratory adaptability will be discussed.</td>
<td>3.00</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HK*4600 Applied Human Kinetics II W (3-3) [0.75]</td>
<td>The objective of this course is to expand on the introductory laboratory practices developed in HK 3600 Applied Human Kinetics I. Students will examine the functioning of a human body at rest and in motion, while learning clinical and advanced laboratory techniques. The students will be introduced to the underlying concepts of various physiological and biomechanical measures in lecture. Subsequently, the principles from the lecture will be used to make direct measures in the laboratory, with an emphasis on understanding exercise physiology, clinical testing practices, and integrative approaches to studying human movement. Students will be asked to critically analyze the laboratory measures and findings, and to integrate the lecture and laboratory material in formalized laboratory reports.</td>
<td>3.00</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
<tr>
<td>HK*4610 Health and Injury Biomechanics F (3-2) [0.50]</td>
<td>This course presents an overview of bone and joint function from a biomechanics perspective, within the framework of health and injury. Particular emphasis is placed on the influence of biomechanical signals on the regulation of bone and joint structure and function. Individual diseases, such as osteoarthritis, will be considered as they impact the various tissues of the joint (cartilage, ligament and bone) and the neuromuscular system. The laboratory will provide supplementary material illustrating particular aspects of musculoskeletal function including in vivo and in vitro biomechanical testing.</td>
<td>3.00</td>
<td>Department of Human Health and Nutritional Sciences</td>
</tr>
</tbody>
</table>

Prerequisite(s): ENGG*3150 or HK*2270

Department(s): Department of Human Health and Nutritional Sciences
### Humanities

**College of Arts**

#### HUMN*3020 Myth and Fairy Tales in Germany W (3-0) [0.50]

The course explores the role of mythology, fairy tales and legends in German literature and culture of the late 18th and 19th centuries. Topics may include the formation of a national identity, the allegorical fairy tale and its role in Romanticism, women and the fairy tale, the fairy tale and the socialization of children (incl. Disney), romantic mythology in music, art and literature. Authors may include Goethe, Brothers Grimm, ETA Hoffman, Wagner. Lectures and texts are English. This course is offered in conjunction with GERM*3020.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** 5.00 credits

**Department(s):** School of Languages and Literatures

#### HUMN*3100 London Studies in the Humanities W (2-3) [0.50]

An integrated course of studies in the Humanities (including 2 or more of theatre, visual arts, history, music, literature and philosophy) as they relate to London cultural resources. For London Semester students only.

**Prerequisite(s):** Admission to London Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3150 Paris Studies in the Humanities W (2-3) [0.50]

An integrated course of study in the Humanities (including 2 or more of theatre, visual arts, history, music, literature and philosophy) as they relate to Paris cultural resources. For Paris Semester students only.

**Prerequisite(s):** Admission to Paris Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3190 Experiential Learning S,F,W (0-0) [0.50]

This course provides an opportunity for independent study based in the Arts and/or Humanities related to either voluntary or paid experience. Evaluation will be based on assignments directly related to the experience. Students interested in this course must have their project approved by the instructor and the Office of the Associate Dean (Academic) of the College of Arts prior to the semester in which they plan to engage in their experiential learning experience.

**Prerequisite(s):** 7.50 credits

**Restriction(s):** Instructor consent required.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3210 Introduction to Polish History and Culture F (6-4) [1.00]

The core course for the Krakow Semester consisting of three major components: 1) Polish language training, 2) a general introduction to Polish geography, politics and contemporary life and, 3) Polish history and the arts. For Krakow Semester students only.

**Prerequisite(s):** Admission to Krakow Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3220 Krakow Studies in the Humanities I F (3-2) [0.50]

An integrated course of studies in the Humanities as they relate to the resources of Krakow, Poland. For Krakow Semester students only.

**Prerequisite(s):** Admission to the Krakow Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3230 Krakow Studies in the Humanities II F (3-2) [0.50]

An integrated course of studies in the Humanities as they relate to the resources of Krakow, Poland. For Krakow Semester students only.

**Prerequisite(s):** Admission to the Krakow Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3240 India Studies in the Humanities W (3-0) [0.50]

An integrated course of studies in the Humanities as they relate to India. This course looks at selected aspects of one or more areas in the humanities, including Indian religions, philosophy, literature (in English), history, language (Hindi), art and music. For India Semester students only.

**Prerequisite(s):** Admission to the India Semester.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3300 Latin American Studies in the Humanities F,W (1-2) [0.50]

This is an integrated course of studies in the Humanities as they relate to the resources of Latin America. It is offered either as preparation for the Latin America semester (in fall) or during this study abroad program (in winter).

**Prerequisite(s):** Admission to the Latin America semester.

**Restriction(s):** Instructor consent required.

**Department(s):** Dean's Office, College of Arts

#### HUMN*3400 Renaissance Lovers and Fools W (3-0) [0.50]

This course focuses on texts and films pertaining to World War II and the Holocaust, the development of the thoughts and the language of genocide, and the representation of the Holocaust in literature and films. The objective is to gain an understanding of the ideas and emotions underlying ethnocentrism and anti-Semitism, and to consider artistic responses to the experience of persecution and mass-murder. Lectures and discussions are in English. Students who wish for a German credit must register for GERM*3470.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** 5.00 credits

**Department(s):** School of Languages and Literatures

#### HUMN*3470 Holocaust & WWII in German Lit. & Film W (3-0) [0.50]

This course provides an opportunity for independent study based in the Arts and/or Humanities related to either voluntary or paid experience. Evaluation will be based on assignments directly related to the experience. Students interested in this course must have their project approved by the instructor and the office of the Associate Dean (Academic) of the College of Arts prior to the semester in which they plan to engage in their experiential learning experience.

**Prerequisite(s):** 10.00 credits

**Restriction(s):** Instructor consent required.

**Department(s):** Dean's Office, College of Arts
## Interdisciplinary Physical Science

### IPS*1500 Integrated Mathematics and Physics I F (6-4) [1.00]
This is a foundational course for students in B.Sc. mathematical and physical sciences majors. The disciplines of Mathematics and Physics are taught in an integrated fashion that demonstrates how they support and enrich one another. Atomic structure, algebra and trigonometry, forces and Newton's laws, functions and graphing, differentiation, angular momentum and energy conservation, limits, integration, kinematics, and special relativity are presented in a harmonized fashion to ensure students have an improved understanding of these fundamentals.

**Prerequisite(s):** (4U Calculus and Vectors or equivalent), (4U Physics or PHYS*1020 or equivalent)

**Restriction(s):** MATH*1080, MATH*1200, PHYS*1000, PHYS*1080. Restricted to B.Sc. students in BPCH, BPCH:C, BMPH, BMPH:C, CHPY, CHPY:C, CHEM, CHEM:C, MSCI, NANO, NANO:C, PSCI, PHYS, PHYS:C, TYPY.

**Department(s):** Department of Physics, Department of Mathematics and Statistics

### IPS*1510 Integrated Mathematics and Physics II W (6-4) [1.00]
This is the second foundational course for students in B.Sc. mathematical and physical sciences majors. The disciplines of Mathematics and Physics are taught in an integrated fashion that demonstrates how they support and enrich one another. Thermodynamics, integration, electrostatics, partial derivatives, multidimensional integrals, simple harmonic motion, Taylor's series, and spectroscopy are presented in a harmonized fashion to ensure students have an improved understanding of these fundamentals.

**Prerequisite(s):** IPS*1500

**Restriction(s):** MATH*1210, MATH*2080, PHYS*1010, PHYS*1070, PHYS*1130. Restricted to B.Sc. students in BPCH, BPCH:C, BMPH, BMPH:C, CHPY, CHPY:C, CHEM, CHEM:C, MSCI, NANO, NANO:C, PSCI, PHYS, PHYS:C, TYPY.

**Department(s):** Department of Physics, Department of Mathematics and Statistics
### Interdisciplinary Social Science

**ISS*2000 Asia U (3-0) [0.50]**

This course will survey China and/or India, noting the major historical trends, cultural factors, economic systems, and political institutions and political processes.

*Department(s):* Department of Political Science

**ISS*3100 London Studies in the Social Sciences W (2-3) [0.50]**

An integrated course of studies in the social sciences as they relate to the resources of London. For London Semester students only.

*Restriction(s):* Admission to the London Semester.

*Department(s):* Dean's Office, College of Arts

**ISS*3150 Paris Studies in the Social Sciences W (2-0) [0.50]**

An integrated course of studies in the social sciences as they relate to the resources of Paris. For Paris Semester students only.

*Restriction(s):* Admission to the Paris Semester.

*Department(s):* Dean's Office, College of Arts

**ISS*3250 Krakow Studies in the Social Sciences I F (3-2) [0.50]**

An integrated course of studies in the social sciences as they relate to the resources in Krakow, Poland. For Krakow students only.

*Restriction(s):* Admission to the Krakow Semester.

*Department(s):* Dean's Office, College of Social and Applied Human Sciences

**ISS*3260 Krakow Studies in the Social Sciences II F (3-2) [0.50]**

An integrated course of studies in the social sciences as they relate to the resources in Krakow, Poland. For Krakow students only.

*Restriction(s):* Admission to the Krakow Semester.

*Department(s):* Dean's Office, College of Social and Applied Human Sciences

**ISS*3270 India Studies in the Social Sciences W (3-0) [0.50]**

An integrated course of studies in the social sciences as they relate to India. This course looks at selected aspects of one or more areas in the social, geographic, economic and political aspects of Indian society. For India Semester students only.

*Restriction(s):* Admission to the India Semester.

*Department(s):* Dean's Office, College of Social and Applied Human Sciences

**ISS*3300 Latin American Studies in the Social Sciences F,W (1-2) [0.50]**

This is an integrated course of studies in the social sciences as they relate to the resources of Latin America. It is offered either as preparation for the Latin America semester (in fall) or during this study abroad program (in winter).

*Restriction(s):* Admission to the Latin America semester. Instructor consent required.

*Department(s):* Dean's Office, College of Arts

**ISS*3420 Women Social and Political Theorists W (3-0) [0.50]**

The writings of seventeenth and nineteenth century women social and political theorists will be explored as contributing to the development of classical and contemporary social and political theory. These women wrote on status of women and gender role issues as well as dealing with such fundamental matters as the nature and origin of society/social contract, political rights and obligations, government, constitutional change, revolution, slavery, socialism, the welfare state, imperialism and racism. An important feature of the course would be to show women theorists' contributions on central political interests and the integration of gender issues with those of class and race.

*Prerequisite(s):* SOAN*2111/2 or POLS*2000

*Restriction(s):* Not available to students in Anthropology, Criminal Justice & Public Policy or Sociology areas of study.

*Department(s):* Department of Sociology and Anthropology, Department of Political Science
**Interdisciplinary University**

UNIV*3500, UNIV*3550 and UNIV*4500 are re-numbered and now appear under Environmental Design and Rural Development (EDRD)

UNIV*1150 The Politics, Science and Culture of Hunger W (0-0) [1.00]

Hunger is one of the most pressing challenges confronting societies across the globe. Incorporating the perspectives of the sciences, social sciences and humanities, the course will examine hunger as a lived experience and the challenges that face those who are working to eradicate it. Using a case-based approach students will examine issues that require consideration of interdisciplinary fields of study including: global economic and political forces; underlying scientific and technological issues particularly as they relate to agriculture; the interplay of governmental and non-governmental agencies, along with supra-governmental agencies such as the United Nations, the World Food Program and the International Monetary Fund; and the importance of culture and beliefs in shaping attitudes in the developed and developing world.

Offering(s): Offered through Distance Education format only.
Prerequisite(s): 2.00 credits
Restriction(s): First year students with a maximum of 5.50 credits. Instructor consent required.
Department(s): Provost & VP Academic

UNIV*1200 First Year Seminar F,W (3-0) [0.50]

First Year Seminars are interdisciplinary courses designed especially for first year students. The goal of the First Year Seminar course is to provide opportunities for students to participate in small enrollment, discussion-oriented classes in their first year. Different seminar topics are offered each year in each separate course section, reflecting the particular research or professional interest of the course instructor. The seminar course counts as a free elective in the student's Schedule of Studies. For information about how the seminar courses may in some cases fulfill particular program distribution requirements, students should contact their program counsellor. A list of current and archived offerings is available by following the links on the First Year Seminars web page.

Restriction(s): Fewer than 5.00 credits.
Department(s): Provost & VP Academic

UNIV*1250 Experiential Learning Opportunity I: Peer Helper U (0-0) [0.00]

Open only to students who have been accepted into the Peer Helper program. This 0.00 credit course recognizes the successful completion of the Peer Helper training program and a supervised field experience in an approved Peer Helper placement. A pass/fail grade will not be assigned to UNIV*1250 until UNIV*1260 has been completed. Students who wish to enroll in this course should see Student Life and Career Services for more information.

Prerequisite(s): UNIV*1250
Department(s): Associate VP Academic

UNIV*1260 Experiential Learning Opportunity II: Peer Helper U (0-0) [0.00]

Open only to students who have been accepted into the Peer Helper program. This 0.00 credit course recognizes the successful completion of the Peer Helper training program and a supervised field experience in an approved Peer Helper placement. A pass/fail grade will be assigned at the end of the completion of both UNIV*1250 and UNIV*1260. Students who wish to enroll in this course should see Student Life and Career Services for more information.

Prerequisite(s): UNIV*1250, UNIV*1260
Department(s): Associate VP Academic

UNIV*2260 Experiential Learning Opportunity IV: Peer Helper U (0-0) [0.00]

Open only to students who have been accepted into the Peer Helper program. This 0.00 credit course recognizes the successful completion of the Peer Helper training program and a supervised field experience in an approved Peer Helper placement. A pass/fail will be assigned at the end of the completion of both UNIV*2250 and UNIV*2260. Students who wish to enroll in this course should see Student Life and Career Services for more information.

Prerequisite(s): UNIV*2250
Department(s): Associate VP Academic

UNIV*2410 Engaged Global Citizenship W (3-0) [0.50]

In this course students will gain an understanding of the concepts, values, and skills related to effective community engagement and responsible global citizenship. As culturally-aware global citizens, students will be challenged to identify a meaningful role for themselves in contributing to a more equitable and sustainable environment by developing an action plan for participating in service activities at the local, national or international scale.

Prerequisite(s): 4.00 credits
Department(s): Department of Political Science

UNIV*2810 Civic Engagement & Service Learning W (3-0) [0.50]

This course provides a unique opportunity for students to develop civic leadership skills and increase their awareness and appreciation for the social relevance of higher education through a community service-learning experience. Curricular and co-curricular learning are integrated through continued academic study and its application, modification, and critique in a community context. Students will conduct research and seminars on a selected topic while simultaneously completing a placement in a community agency appropriate to that topic.

Prerequisite(s): 9.00 credits
Department(s): Associate VP Academic

UNIV*3010 University Studies in London I U (3-0) [0.50]

This course is an intensive and integrated study in the arts, social sciences and/or sciences as they relate to the resources of London. This course is for London Session Semester students only.

Prerequisite(s): Admission to the London Semester.
Department(s): Dean's Office, College of Arts

UNIV*3020 University Studies in London II U (3-0) [0.50]

This course is an intensive and integrated study in the arts, social sciences and/or sciences as they relate to the resources of London. This course is for London Session Semester students only.

Prerequisite(s): Admission to the London Semester.
Department(s): Dean's Office, College of Arts

UNIV*3150 University Studies in Paris I W (2-3) [0.50]

An integrated course of study in subject areas that will vary from year to year but relate to resources in Paris.

Prerequisite(s): Admission to the Paris Semester.
Department(s): Dean's Office, College of Arts

UNIV*3160 University Studies in Paris II W (2-3) [0.50]

An integrated course of study in subject areas that will vary from year to year but relate to resources in Paris.

Prerequisite(s): Admission to the Paris Semester.
Department(s): Dean's Office, College of Arts

UNIV*3170 University Studies in Paris III W (2-3) [0.50]

An integrated course of study in subject areas that will vary from year to year but relate to resources in Paris.

Prerequisite(s): Admission to the Paris Semester.
Department(s): Dean's Office, College of Arts

UNIV*3210 Contemporary China F (3-0) [1.00]

This course examines some of the most pressing contemporary issues in contemporary China. The course engages perspectives from the humanities and social sciences.

Prerequisite(s): Admission to the Shanghai semester.
Restriction(s): Instructor consent required.
Department(s): Dean's Office, College of Arts

UNIV*3220 University Studies in Shanghai I F (3-0) [0.50]

This is an intensive and integrated course which focuses on a topic relating to Shanghai.

Prerequisite(s): Admission to the Shanghai semester.
Restriction(s): Instructor consent required.
Department(s): Dean's Office, College of Arts
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIV*3230</td>
<td>University Studies in Shanghai II U</td>
<td>(3-0)</td>
<td>Admission to the Shanghai semester.</td>
<td>Instructor consent required.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>UNIV*3240</td>
<td>University Studies in Shanghai III U</td>
<td>(3-0)</td>
<td>Admission to the Shanghai semester.</td>
<td>Instructor consent required.</td>
<td>Dean's Office, College of Arts</td>
</tr>
<tr>
<td>UNIV*4410</td>
<td>Civic Engagement with Communities F</td>
<td>(3-0)</td>
<td>UNIV*2410, 90 hours of approved community service.</td>
<td>Instructor consent required.</td>
<td>Department of Political Science</td>
</tr>
</tbody>
</table>

This is an intensive and integrated course which focuses on a topic relating to Shanghai.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBIO*3100</td>
<td>Interpreting Biodiversity I W (1.5-3) [0.50]</td>
<td>12.00</td>
<td>Enrolment restricted to BSCH:BIOD majors.</td>
</tr>
<tr>
<td>IBIO*4100</td>
<td>Interpreting Biodiversity II F (1.5-3) [1.00]</td>
<td>12.00</td>
<td>Normal cumulative average of 75% in the biology courses.</td>
</tr>
<tr>
<td>IBIO*4500</td>
<td>Research in Integrative Biology I F,W (1-5) [0.75]</td>
<td>12.00</td>
<td>Normal cumulative average of 70% in the biology courses.</td>
</tr>
<tr>
<td>IBIO*4510</td>
<td>Research in Integrative Biology II F,W (1-5) [0.75]</td>
<td>12.00</td>
<td>Normal cumulative average of 70% in the biology courses.</td>
</tr>
<tr>
<td>IBIO*4521</td>
<td>Thesis in Integrative Biology F (0-12) [1.00]</td>
<td>12.00</td>
<td>Normal cumulative average of 75% in the biology courses.</td>
</tr>
</tbody>
</table>

**IBIO*4500 Research in Integrative Biology I F,W (1-5) [0.75]**

This is the first of two courses that explore global and local issues in biodiversity as a capstone experience for biodiversity majors. The overall goal of the course is to provide opportunities for students to engage the application of their knowledge and skills to complex problems and issues involving “real-life” biodiversity projects within academic, government, or industry spheres. The learning outcomes include the development of key skills for interpreting biodiversity and writing a research proposal and work plan that will be executed in IBIO*4100.

**IBIO*4521 Thesis in Integrative Biology F-W [2.00]**

This is the second part of the two semester course IBIO*4521/2. Refer to IBIO*4521/2 for course description. This is a two semester course offered over consecutive semesters F-W. When you select this course, you must select IBIO*4521 in the Fall semester and IBIO*4522 in the Winter semester. A grade will not be assigned to IBIO*4521 until IBIO*4522 has been completed.

**IBIO*4522 Thesis in Integrative Biology W (0-12) [1.00]**

This course is the second part of the two semester course IBIO*4521/2. Refer to IBIO*4521/2 for course description. This is a two semester course offered over consecutive semesters F-W. When you select this course, you must select IBIO*4521 in the Fall semester and IBIO*4522 in the Winter semester. A grade will not be assigned to IBIO*4521 until IBIO*4522 has been completed.

**IBIO*4600 Integrative Marine and Freshwater Research F (3-3) [1.00]**

This is the second of two courses that explore global and local issues in biodiversity as a capstone experience for biodiversity majors. The overall goal of the course is to provide opportunities for students to engage the application of their knowledge and skills to complex problems and issues involving “real-life” biodiversity projects within academic, government, or industry spheres. The learning outcomes include the development of key skills for interpreting biodiversity and writing a research proposal and work plan that will be executed in IBIO*4100.

**IBIO*4521 Thesis in Integrative Biology F-W [2.00]**

This is the second part of the two semester course IBIO*4521/2. Refer to IBIO*4521/2 for course description. This is a two semester course offered over consecutive semesters F-W. When you select this course, you must select IBIO*4521 in the Fall semester and IBIO*4522 in the Winter semester. A grade will not be assigned to IBIO*4521 until IBIO*4522 has been completed.

**IBIO*4522 Thesis in Integrative Biology W (0-12) [1.00]**

This course is the second part of the two semester course IBIO*4521/2. Refer to IBIO*4521/2 for course description. This is a two semester course offered over consecutive semesters F-W. When you select this course, you must select IBIO*4521 in the Fall semester and IBIO*4522 in the Winter semester. A grade will not be assigned to IBIO*4521 until IBIO*4522 has been completed.
### International Development

#### IDEV*2500 International Development Studies W (4-0) [0.50]
This course is an introduction to a broad range of topics in international development as studied by various researchers and from perspectives of different social-science disciplines. Special emphasis will be placed on research arising from the seven areas of emphasis in the undergraduate IDS program, the integration of diverse disciplines and paradigms, and the implications for public policy. Students in the International Development major should complete this course before semester five.

**Prerequisite(s):**
- POLS*2080, (ANTH*1150 or ECON*1050)

**Equate(s):**
- IDEV*2010

**Restriction(s):**
- Registration in B.A. International Development major, minor or area of concentration.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences

#### IDEV*3010 Case Studies in International Development F,W (3-0) [0.50]
This course is an in-depth examination of select case studies in international development.

**Prerequisite(s):**
- 10.00 credits including IDEV*2010 or IDEV*2500

**Restriction(s):**
- Registration in B.A. International Development major. Minimum of 68% overall cumulative average.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences

#### IDEV*3200 Individual Work/Study in International Development S,F,W (3-0) [0.50]
This course is intended for students who seek to combine work and study in development with their academic course work. It may be used in connection with internships or work at international development agencies or other appropriate businesses and organizations (in Canada and abroad), for research and/or experience in a developing country, or for other practica or programs. Any faculty member at the University of Guelph with appropriate expertise may supervise the work/study project. In each case, the student and faculty member will agree on an outline of the work/study project and evaluation criteria. In all cases the project will involve a writing component.

**Prerequisite(s):**
- 10.00 credits

**Restriction(s):**
- Instructor consent required. Written approval of the faculty advisor for International Development.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences

#### IDEV*4190 Regional Context S,F,W (1.5-0) [0.25]
In this course students will learn about a region that they intend to study further in an advanced work/study project (IDEV*4200) or in a structured semester abroad. It may be offered as a reading course or as a seminar.

**Prerequisite(s):**
- 10.00 credits including IDEV*2010 or IDEV*2500

**Restriction(s):**
- Instructor consent required. Written approval of the faculty advisor for International Development.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences

#### IDEV*4200 Advanced Work/Study in International Development S,F,W (3-0) [0.75]
Individual work/study option at an advanced level. See IDEV*3200 for course description.

**Prerequisite(s):**
- IDEV*4190

**Restriction(s):**
- Instructor consent required. Written approval of the faculty advisor for International Development.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences

#### IDEV*4500 International Development Seminar F,W (3-0) [1.00]
This course brings together students in international development in their final year of study to examine key debates and to integrate knowledge from different areas of emphasis in the specialization. Students draw from a variety of disciplinary and inter-disciplinary perspectives in lectures, text-based seminars and in reaction to guest speakers. In addition, students develop and present research projects which focus theoretical insight on practical concerns.

**Prerequisite(s):**
- 15.00 credits

**Restriction(s):**
- Registration in B.A. International Development major. Minimum of 68% overall cumulative average. Instructor consent required. Written approval of the faculty advisor for International Development.

**Department(s):**
- Dean's Office, College of Social and Applied Human Sciences
# Italian Studies

**School of Languages and Literatures**

Note: Literary texts are, at all levels, studied in the original language. Students registering in these courses will be expected to have the appropriate knowledge.

### ITAL*1060 Introductory Italian I F,W (4-0) [0.50]
This is a beginning course in Italian providing the fundamentals of grammar, structure and idiom. Introduction to aspects of Italian life and culture through audio-visual aids.

**Offering(s):** Also offered through Distance Education format.

**Restriction(s):** Not available to students who have credit for 4U Italian or equivalent.

**Department(s):** School of Languages and Literatures

### ITAL*1070 Introductory Italian II W (3-1) [0.50]
This course is a continuation of ITAL*1060. In addition to basic grammar and composition, texts from contemporary culture are introduced.

**Prerequisite(s):** ITAL*1060

**Restriction(s):** This course may not be taken by students who have OAC Italian or equivalent.

**Department(s):** School of Languages and Literatures

### ITAL*2050 Introduction to Literature F (2-1) [0.50]
This course introduces students to the scholarly study of literature, including critical commentaries. The course focuses on the notion of a European literary tradition in which works by German and Italian authors are key. The lectures are in English, but students taking the course under this code will read texts originally written in Italian in the original language and German works in Italian translation. Students will submit some work in Italian.

**Prerequisite(s):** ITAL*2090

**Restriction(s):** GERM*2050

**Department(s):** School of Languages and Literatures

### ITAL*2090 Intermediate Italian F (5-0) [1.00]
An intensive language course that continues the grammar begun at the introductory level while introducing additional speaking, listening, and writing practice.

**Prerequisite(s):** ITAL*1070

**Restriction(s):** ITAL*2060, ITAL*2090

**Department(s):** School of Languages and Literatures

### ITAL*3060 Advanced Italian W (3-0) [0.50]
This course will combine Italian grammar, composition, and translation with Italian literature and film. While addressing aspects of modern and contemporary Italian literature, history and culture, the course will teach students to understand spoken Italian, to converse, and to communicate in written Italian at an advanced level.

**Prerequisite(s):** ITAL*2070 or ITAL*2090

**Department(s):** School of Languages and Literatures

### ITAL*3150 Medieval Italian Literature F (3-0) [0.50]
A study of Dante, Petrarch, and Boccaccio.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** ITAL*2090

**Department(s):** School of Languages and Literatures

### ITAL*3400 Renaissance Lovers and Fools W (3-0) [0.50]
In this course, students will read Italian Renaissance plays such as Machiavelli's "The Mandrake" and Bibbiena's "Calandria" with special attention to the portrayals of lovers and fools. The course will place particular emphasis on representations of class and gender relations. Additional readings in medieval literature, history, and critical theory will provide background and context for the plays. Lectures and texts are in English. Students registered in ITAL*3400 will meet a fourth hour per week to discuss texts in Italian. This course is offered in conjunction with HUMN*3400.

**Prerequisite(s):** ITAL*2090

**Co-requisite(s):** HUMN*3400

**Restriction(s):** ITAL*2100, HUMN*2100

**Department(s):** School of Languages and Literatures

### ITAL*3700 Experiential Learning and Language S,F,W (0-0) [0.50]
This course provides an opportunity for independent study based on an experiential project in Italian. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.

**Prerequisite(s):** 10.00 credits including 1.50 credits in Italian.

**Restriction(s):** A minimum cumulative average of 70% in all Italian course attempts. Instructor consent required.

**Department(s):** School of Languages and Literatures

### ITAL*4900 Research Paper in Italian Studies F,W (3-0) [0.50]
This is a research project on some aspect of Italian language, literature, or thought. The topic must be approved by the section; the paper will be written under the regular guidance of a faculty advisor.

**Prerequisite(s):** ITAL*3060, ITAL*3150, ITAL*3400

**Department(s):** School of Languages and Literatures
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARC*1100</td>
<td>Design and Communications Studio F (3-3) [0.75]</td>
<td>Lectures and projects emphasizing the integration of design theory, skills and knowledge using site scale and urban design projects. Highlighting the use of contemporary history.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*2020</td>
<td>Design Studio W (2-4) [0.75]</td>
<td>An introduction to the physical design professions with emphasis on the role of landscape architects. Emphasis on development of design awareness, process, communication skills and creativity.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*2100</td>
<td>Landscape Analysis F (2-2) [0.50]</td>
<td>This course explores the cultural form expressed in landscapes from ancient times to the present.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*2220</td>
<td>Planting Design W (1-2) [0.50]</td>
<td>This course covers the visual and physical characteristics of plants and their use. Students will study design theory and its application at a specific scale and the use of plants in a wide range of applications.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*2420</td>
<td>Materials and Techniques W (3-0) [0.50]</td>
<td>The study of materials commonly used for landscape construction. Specification of procedures and materials for contractual purposes. Detail drafting.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*2820</td>
<td>Urban and Regional Planning W (3-0) [0.50]</td>
<td>Introduction to the evolution and history of planning and its conceptual base. A study of the theoretical foundations of planning. Emphasis on the Canadian scene and on Canadian planning literature.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3040</td>
<td>Site Planning and Design Studio F (2-4) [0.75]</td>
<td>Application of the site planning process, including programming, site analysis, functional analysis and diagramming. Application of design theory and landscape analysis to site design.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3050</td>
<td>Landscape Architecture I W (2-4) [0.75]</td>
<td>Lectures and projects emphasizing the integration of design theory, skills and knowledge using site scale and urban design projects. Highlighting the use of contemporary history.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3060</td>
<td>Landscape Architecture II F (2-4) [0.75]</td>
<td>Application of the landscape architectural design process to conservation, development, and rehabilitation of landscapes. Projects at an intermediate scale focusing on biophysical, cultural and visual resources as primary design determinants. Emphasis on secondary research, analysis, program development, alternative concepts and design master planning.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3070</td>
<td>Landscape Architecture III F (2-4) [1.00]</td>
<td>Exercises in regional scale design and master planning to provide an understanding of the integrative design process that considers ecological, technological, socio-economic, human and aesthetic factors in the land development process. Projects focus on land planning, community design, urban design, and public involvement and communication.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3320</td>
<td>Principles of Landscape Ecology F (3-0) [0.50]</td>
<td>This course offers an integrated approach to understanding the functioning of landscapes.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3330</td>
<td>Landscape Construction I W (2-4) [0.50]</td>
<td>Production of construction drawings, documents and cost estimates using computer and manual techniques.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3340</td>
<td>Landscape Construction II F (2-4) [0.75]</td>
<td>Lectures and studio exercises that integrate construction documentation with design. The technical procedures needed to direct design implementation including layout, grading, utility design, and planting plans.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3340</td>
<td>Landscape Construction II F (2-4) [0.75]</td>
<td>Production of construction drawings, documents and cost estimates using computer and manual techniques.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*3500</td>
<td>Independent Study S,F,W (6-6) [0.50]</td>
<td>In this course each student establishes, in consultation with the faculty member chosen, the content of special study within the area of expertise of that instructor.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*4090</td>
<td>Seminar W (3-0) [0.50]</td>
<td>An integrated overview of professional issues involving practice, ethics, environmental concerns, government policy, research needs and professional responsibilities to society. Emphasis on writing and oral presentations.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*4510</td>
<td>Honours Thesis F (3-0) [0.50]</td>
<td>Students will select significant problems related to landscape architecture and explore the scholarship related to problem identification and resolution. The aim of the course is to allow students to integrate knowledge and skills acquired in preceding courses and produce a major paper.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>LARC*4610</td>
<td>Professional Practice F (3-0) [0.50]</td>
<td>Lectures and assignments dealing with professional ethics, organizations, contract law and procedures, relationships with clients, contractors and professional practitioners, office procedure and professional promotion practices and trends.</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Prerequisites</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LARC*4620</td>
<td>Internship in Landscape Architecture S,F,W (0-10)</td>
<td>1.00</td>
<td>LARC<em>3060, LARC</em>3440</td>
</tr>
<tr>
<td>LARC*4710</td>
<td>Integrative Design Studio W (2-6)</td>
<td>1.00</td>
<td>LARC<em>3070, LARC</em>4510</td>
</tr>
<tr>
<td>LARC*4730</td>
<td>Special Study in Landscape Architecture S,F,W (0-4)</td>
<td>0.50</td>
<td>LARC*3040</td>
</tr>
<tr>
<td>LARC*4740</td>
<td>Case Studies S,F,W (0-6)</td>
<td>0.50</td>
<td>LARC*3040</td>
</tr>
</tbody>
</table>

This course provides an experiential learning opportunity requiring professional office experience and faculty supervision under program regulations with work experience for academic credit. Students are required to submit a project or paper as part of the course requirements.

In this capstone design studio students integrate the skills and knowledge obtained in previous courses to produce a comprehensive final design project relating to a significant social and environmental problems. Students are encouraged to select problems that require an interdisciplinary approach.

This is a supervised independent study course involving competitions, special projects, modules, and other formats.

Students participate in a case study supervised by a faculty member. Travel and field studies may be involved and may entail additional costs. Students are required to submit a major paper or project.
### Latin

*School of Languages and Literatures*

**Note:** Literary texts are, at all levels, studied in the original language. Students registering in these courses will be expected to have the appropriate knowledge. Higher level courses in Latin are available as language modules attached to selected Classical Studies courses which are taken as double-weighted courses. (See Classical Studies course descriptions.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAT*1100 Preliminary Latin I  F (3-0) [0.50]</td>
<td>A beginning course in Latin providing the fundamentals of structure and grammar.</td>
<td></td>
<td>Restriction(s): This course may not be taken by anyone who has Grade 12 Latin</td>
</tr>
<tr>
<td></td>
<td><strong>Department(s):</strong> School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAT*1110 Preliminary Latin II  W (3-0) [0.50]</td>
<td>A continuation of LAT*1100.</td>
<td></td>
<td><strong>Prerequisite(s):</strong> LAT*1100 or Grade 12 Latin</td>
</tr>
<tr>
<td></td>
<td><strong>Department(s):</strong> School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAT*2000 Latin Literature F (3-0) [0.50]</td>
<td>A course in Latin literature based on relevant texts.</td>
<td></td>
<td><strong>Prerequisite(s):</strong> Grade 12 Latin or LAT*1110</td>
</tr>
<tr>
<td></td>
<td><strong>Department(s):</strong> School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAT*4100 Directed Readings in Latin Literature F (3-0) [0.50]</td>
<td>A reading course in Latin Literature designed according to the needs and the interests of the individual student.</td>
<td></td>
<td><strong>Prerequisite(s):</strong> 1 of CLAS<em>3060, CLAS</em>3120, CLAS*3300</td>
</tr>
<tr>
<td></td>
<td><strong>Department(s):</strong> School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAT*4150 Research Paper: Latin F,W (3-0) [0.50]</td>
<td>A major essay on an area of study to be determined in consultation with the Classics Faculty in the School.</td>
<td></td>
<td><strong>Prerequisite(s):</strong> CLAS<em>3060 or CLAS</em>3120</td>
</tr>
<tr>
<td></td>
<td><strong>Department(s):</strong> School of Languages and Literatures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Linguistics

School of Languages and Literatures

**LING*1000 Introduction to Linguistics W (3-0) [0.50]**

The nature of language. An elementary survey of linguistic disciplines. Phonetics, morphology, syntax, semantics, language, and society.

*Department(s):* School of Languages and Literatures
Management

Department of Management
Department of Marketing and Consumer Studies
School of Hospitality, Food, and Tourism Management

MGMT*1000 Introduction to Business F (4-0) [1.00]
This course is intended for B.Comm. students in semester one. It provides students with an understanding of the evolution of forms of business organization and their role in social and economic development. The main focus is on current economic, social, and environmental issues that impact business organizations and which, in turn, are impacted by business decisions. Ethical considerations and the concept of sustainability are essential components. Students develop oral and written communication skills in small seminar groups.
Restriction(s): CME*1000 Registration in B.Comm. and fewer than 7.50 credits.
Department(s): School of Hospitality, Food and Tourism Management

MGMT*2150 Introduction to Canadian Business Management U (3-0) [0.50]
This is an introductory course in the fundamentals of business management in Canada. Students will be exposed to the basic functions of business and management. This course will also cover small business and entrepreneurship, forms of business ownership, competing in the global business environment and the economic and political realities of business in Canada today.
Offering(s): Also offered through Distance Education format.
Equate(s): HTM*2150
Restriction(s): B.Comm. students cannot take this course for credit.
Department(s): School of Hospitality, Food and Tourism Management

MGMT*3020 Corporate Social Responsibility S,F,W (3-0) [0.50]
This course provides students an opportunity to examine a comprehensive range of topics and issues related to business and sustainability and aims to explore the implications of changing stakeholder expectations, and opportunities for organizational sustainable value creation. Key topics will include CSR theories and frameworks, global issues and role of business in society, socially responsible investing, green consumption, CSR and firm competitive advantage, reputation, corporate governance and ethics, regulation and social/environmental reporting.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 9.00 credits
Equate(s): BUS*3020
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Management

MGMT*3030 Managerial Communications and Team Leadership W (3-0) [0.50]
This course is designed to enhance managerial skills in interpersonal communication (both oral and written), team leadership and meeting facilitation through an intensive seminar experience. The content of the seminars are based on a review of the ‘great books’ of leadership and management. Students will collectively select, review, discuss and debate the texts, and upon successful completion of the course will have further developed their skills in critical enquiry, consultation, evaluation, presentation, facilitation and leadership.
Prerequisite(s): 12.50 credits.
Restriction(s): Restricted to students in BComm with a minimum 70% cumulative average. Instructor consent required.
Department(s): School of Hospitality, Food and Tourism Management

MGMT*3320 Financial Management S,F,W (3-0) [0.50]
The viewpoint taken in the course is that of the senior financial officer of a business firm. The focus is on the management of cash, accounts receivable, inventory and short and intermediate term liabilities. Emphasis is placed on the analysis and forecasting of financial statements, and financial modeling for planning and controlling the growth of the business enterprise.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of ACCT*2230, BUS*2230 , HAFA*3070 , HTM*3070
Equate(s): BUS*3320
Restriction(s): Registration in BCOMM or B.A.EURS area of emphasis in European Business Studies.
Department(s): Department of Management

MGMT*4000 Strategic Management F,W (4-0) [0.50]
Strategic management is a synthesis of the principles of business management with emphasis upon the formation of business decisions and policies. The purpose of this course is to enable the student to draw on analytical tools and factual knowledge from other courses in analyzing comprehensive business problems and establishing viable plans and methods to implement the developed plans of action.
Prerequisite(s): (1 of ECON*2560, ECON*3460, ECON*3560 ), MGMT*3320, (1 of FARE*3310, HTM*3120, REAL*3890)
Restriction(s): BUS*4250 , HTM*4200 . Restricted to students in B.Comm. and BAH.EURS_EBS. This is a Priority Access Course. See department for more information.
Department(s): School of Hospitality, Food and Tourism Management

MGMT*4020 Interdisciplinary Food Product Development I F (3-3) [0.50]
This is an interdisciplinary course that involves management, food science and human health and nutrition majors. This course requires interdisciplinary teams of students to develop new food products, services and business ventures for the agricultural and food industries. Processes include analyzing, planning, coordinating and implementing information required for the conception, promotion and distribution of new food products and marketing ideas designed to create and maintain beneficial exchanges between food and agricultural industries while meeting the expectations and demands of consumers and the economy.
Prerequisite(s): 14.00 credits, minimum 70% cumulative average
Restriction(s): FOOD*4260, Students in BCOMM, BSC:FOOD and BSC:NANS majors. Instructor consent required.
Department(s): Department of Marketing and Consumer Studies

MGMT*4030 Interdisciplinary Food Product Development II W (3-3) [0.50]
This is an interdisciplinary food product development course that involves management, food science and human health and nutrition majors. This course requires interdisciplinary teams of students to develop new food products, services and business ventures for the agricultural and food industries. Processes include analyzing, planning, coordinating and implementing information required for the conception, promotion and distribution of new food products and marketing ideas designed to create and maintain beneficial exchanges between food and agricultural industries while meeting the expectations and demands of consumers and the economy.
Prerequisite(s): MGMT*4020, minimum 70% cumulative average
Restriction(s): FOOD*4270. Students in BCOMM, BSC:FOOD and BSC:NANS majors. Instructor consent required.
Department(s): Department of Marketing and Consumer Studies

MGMT*4050 Business Consulting F-W (3-0) [0.50]
Offered through the Centre for Business and Student Enterprise, the project-based independent study option is designed to provide senior undergraduate students with an opportunity to pursue an applied course of study while engaging with the local community. The project selected will be determined in agreement between the student and the faculty member with expertise in the area.
Prerequisite(s): (1 of MCS*1000, MGMT*1000, MGMT*2150), 10.00 credits, minimum 70% cumulative average
Restriction(s): Instructor consent required.
Department(s): Department of Marketing and Consumer Studies

MGMT*4060 Business Consulting F-W (3-0) [0.50]
Offered through the Centre for Business and Student Enterprise, the project-based independent study option is designed to provide senior undergraduate students with an opportunity to pursue an applied course of study while engaging with the local community. The project selected will be determined in agreement between the student and the faculty member with expertise in the area.
Prerequisite(s): (1 of MCS*1000, MGMT*1000, MGMT*2150), 10.00 credits, minimum 70% cumulative average
Restriction(s): Restricted to students in B.Comm. Instructor consent required.
Department(s): Department of Marketing and Consumer Studies

MGMT*4260 International Business W (3-3) [0.50]
This course covers international business and deals with the strategic and functional areas of management in the international business environment. This course examines the factors that shape strategic management outside a firm’s domestic markets. It uses a mix of readings, lectures, case studies, individual and group projects.
Prerequisite(s): 14.50 credits
Equate(s): BUS*4260
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. See department for more information.
Department(s): Department of Management
This course will focus on the critical analysis of current business practices through the use of case studies to develop integrative decision-making, negotiation and presentation skills. Strategy formulation and implementation will be investigated in the context of complex business case competitions.

**Prerequisite(s):** 9.50 credits,

**Restriction(s):** Restricted to students in B Comm. Minimum of 70% cumulative average. Instructor consent required.

**Department(s):** Department of Management
Marketing and Consumer Studies

Department of Marketing and Consumer Studies

For courses without semester designations, please check with the department. Advance schedules are available in the department.

MCS*1000 Introductory Marketing S,F,W (3-0) [0.50]
This course covers the marketing of both products and services. Students will be introduced to the theoretical concepts through lectures and class discussions and have the opportunity to apply these concepts through case analysis and discussion.
Offering(s): Also offered through Distance Education format.
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Restriction(s): This course may not be taken for credit subsequent to receiving credit in FARE*4370 or HTM*3080
Department(s): Department of Marketing and Consumer Studies

MCS*2000 Business Communication in a Changing World F (3-0) [0.50]
This course provides an overview of business communication by reviewing and discussing key issues (such as ethics and globalization), and the components of a business plan. Weekly lectures are supplemented by discussions of business cases and hands-on assignments designed to introduce students to basic business communication skills
Prerequisite(s): 4.00 credits including MCS*1000
Restriction(s): Registration in BCOMM:MKMN or BCOMM:MKMN:C
Department(s): Department of Marketing and Consumer Studies

MCS*2020 Information Management F,W (3-0) [0.50]
In this course students are introduced to the concepts and principles of information acquisition, manipulation and management as relevant to organizational decision-making. Experience in the evaluation of information technology applications used in organizations is provided.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 4.00 credits
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

MCS*2100 Personal Financial Management S,F,W (3-0) [0.50]
This introductory course is designed to help students develop and achieve their personal goals in financial management.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 5.00 credits
Equate(s): COST*2100
Department(s): Department of Marketing and Consumer Studies

MCS*2600 Fundamentals of Consumer Behaviour F,W (3-0) [0.50]
This course provides an overview of information processing research and theories which consumers respond to stimuli employed in the marketing of products, services and ideas.

MCS*3010 Quality Management W (3-0) [0.50]
This course covers general concepts and expectations of quality assurance from consumer, government, managerial and technological points of view and examines the relationship of national and international groups concerned with quality assurance. Seminar topics apply concepts to selected products and services.
Prerequisite(s): 10.00 credits including 1 of ECON*2740, PSYC*1010, STAT*2040, (1 of ECON*2740, PSYC*1010, STAT*2040, STAT*2060, STAT*2080)
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*3030 Research Methods F,W (3-0) [0.50]
This course examines the concepts, principles and practices for consumer, market and product development research processes. Topics include research problem definition, research objectives, research design, measurement, sampling methods, execution and research management, analysis and interpretation, and report writing.
Prerequisite(s): 1 of ECON*2740, PSYC*1010, STAT*2060
Restriction(s): Registration in B.Comm, MKMN, MKMN:C, REH, REH:C, or the MKMN, MKTG minor. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*3040 Business and Consumer Law S,F,W (3-0) [0.50]
This course introduces students to statutory and common law concerning business and consumer transactions. An overview of the laws of contracts and torts forms the basis of business and producer/consumer relationships. Discussion topics include sale of goods and consumer protection legislation; debtor-creditor relations; competition law; intellectual property rights and manufacturers' product liability.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 4.00 credits
Restriction(s): Registration in B.Comm, program, BA BADM minor, or BA European Studies area of emphasis in European Business Studies. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*3050 Marketing Analytics F,W (3-0) [0.50]
This course teaches students decision making theory and the methods of analysis that support decision making in the marketing discipline. Topics include customer, competitor, market analysis and methods such as forecasting and decision modeling.
Prerequisite(s): 10.00 credits including ECON*1050, (MATH*1000 or MATH*1030), MCS*2600, (1 of ECON*2740, PSYC*1010, STAT*2060)
Equate(s): MCS*3610
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*3060 Consumer Information Processes F,W (3-0) [0.50]
This course provides an in-depth treatment of information processing research and theories as they relate to consumer judgement and choice. Components of theory addressed include: attention and perception, motivation, processing capacity, encoding and memory storage, retrieval and decision processes. Applications to marketplace policy and strategy are discussed.
Prerequisite(s): 15.00 credits including MCS*2600, MCS*3030
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*3620 Marketing Communications F,W (3-0) [0.50]
This course covers concepts of communication management as practiced by organizations in all economic sectors. Communication management principles are applied to the design and evaluation of communication programs.
Prerequisite(s): 10.00 credits including MCS*1000, MCS*2600
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.
Department(s): Department of Marketing and Consumer Studies

MCS*4020 Research in Consumer Studies U (3-0) [0.50]
This course provides the opportunity for an independent investigation of a pertinent topic in consumer studies. Registration requires departmental approval.
Prerequisite(s): 15.00 credits including MCS*3030
Restriction(s): Registration in B.Comm, MKMN or B.Comm, MKMN:C. Instructor consent required.
Department(s): Department of Marketing and Consumer Studies
### XII. Course Descriptions, Marketing and Consumer Studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Department(s)</th>
<th>Restriction(s)</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS*4040</td>
<td>Management in Product Development</td>
<td>F (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
<td>10.00 credits including MCS<em>1000, MCS</em>2600</td>
</tr>
<tr>
<td>MCS*4100</td>
<td>Entrepreneurship</td>
<td>F (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
<td>15.00 credits including MCS*3500</td>
</tr>
<tr>
<td>MCS*4370</td>
<td>Marketing Strategy</td>
<td>F,W (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
<td>15.00 credits including MCS*2600</td>
</tr>
<tr>
<td>MCS*4400</td>
<td>Pricing Management</td>
<td>F (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
<td>10.00 credits including (ECON<em>3740 or MCS</em>3030)</td>
</tr>
<tr>
<td>MCS*4600</td>
<td>International Marketing</td>
<td>F,W (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
<td>10.00 credits including MCS*3030</td>
</tr>
<tr>
<td>MCS*4910</td>
<td>Topics in Consumer Studies</td>
<td>U (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This course provides a lecture-discussion or seminar on a selected topic in consumer studies to be conducted by faculty with expertise in the area. Students should check with the department to determine what topic, if any, will be offered during a semester. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.</td>
<td>15.00 credits including MCS*2600</td>
</tr>
<tr>
<td>MCS*4920</td>
<td>Topics in Consumer Studies</td>
<td>U (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>This course provides a lecture-discussion or seminar on a selected topic in consumer studies to be conducted by faculty with expertise in the area. Students should check with the department to determine what topic, if any, will be offered during a semester. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.</td>
<td>15.00 credits including MCS*2600</td>
</tr>
<tr>
<td>MCS*4950</td>
<td>Consumer Studies Practicum</td>
<td>S,F,W (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>The practicum provides students with supervised experience in developing marketing plans or working on consumer studies projects. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
</tr>
<tr>
<td>MCS*4950</td>
<td>Consumer Studies Practicum</td>
<td>S,F,W (3-0) [0.50]</td>
<td>Department of Marketing and Consumer Studies</td>
<td>The practicum provides students with supervised experience in developing marketing plans or working on consumer studies projects. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.</td>
<td>This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.</td>
</tr>
</tbody>
</table>

---

**MCS*4040 Management in Product Development**

The major components of this course are new product strategy formulation, the role of technical and market research, the analysis of opportunities, management of development processes, product launches, government and regulatory controls.

**Prerequisite(s):**

10.00 credits including MCS*1000, MCS*2600

**Restriction(s):**

This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4100 Entrepreneurship**

This course examines the role and effect of small business in Canada, and, in doing so, helps marketing students appreciate the challenges involved in having full responsibility for a business and/or for creatively moving a business forward. The course focuses on the analysis of entrepreneurial skills and, through the development of the business plan, the steps involved in starting a new venture or increasing the size of a business.

**Prerequisite(s):**

15.00 credits including MCS*3500

**Restriction(s):**

This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4370 Marketing Strategy**

This course focuses on how the dissemination of marketing knowledge can influence society through the decisions made by public policy makers, corporate decision makers and non-profit marketers. It also covers how the marketing decisions made and actions taken by corporate, non-profit and public sector decision makers can affect society. As the theme of 'reciprocal influence' is developed, both direct and indirect influences of marketing knowledge and marketing decisions are pursued.

**Prerequisite(s):**

15.00 credits including MCS*2600

**Restriction(s):**

This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4400 Pricing Management**

The objective of this course is to provide a useful conceptual framework as well as analytical techniques that can be applied in managing pricing functions. Topics to be covered include pricing strategies, tactical issues related to pricing, pricing methods, treatment of costs for pricing, consideration of competition, legal limitations and role of price in customer buying decisions for both consumer and industrial goods and services.

**Prerequisite(s):**

10.00 credits including (ECON*3740 or MCS*3030)

**Restriction(s):**

MCS*3100. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4600 International Marketing**

This course examines the study of marketing in a global context with specific emphasis on the strategic implications of marketing in different country cultures. Included are the global marketing environment and the competitive challenges and opportunities confronting today's international marketers, the cultural environment of global marketing, the assessment of global market opportunities and the development of global marketing strategies.

**Prerequisite(s):**

10.00 credits including MCS*3030

**Restriction(s):**

This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4910 Topics in Consumer Studies**

This course provides a lecture-discussion or seminar on a selected topic in consumer studies to be conducted by faculty with expertise in the area. Students should check with the department to determine what topic, if any, will be offered during a semester. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.

**Prerequisite(s):**

15.00 credits including MCS*2600

**Restriction(s):**

Registration in the B. Comm. MKMN or REH major. Instructor consent required.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4920 Topics in Consumer Studies**

This course provides a lecture-discussion or seminar on a selected topic in consumer studies to be conducted by faculty with expertise in the area. Students should check with the department to determine what topic, if any, will be offered during a semester. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.

**Prerequisite(s):**

15.00 credits including MCS*2600

**Restriction(s):**

Registration in the B. Comm. MKMN or REH major. Instructor consent required.

**Department(s):**

Department of Marketing and Consumer Studies

---

**MCS*4950 Consumer Studies Practicum**

The practicum provides students with supervised experience in developing marketing plans or working on consumer studies projects. Alternatively, they can ask a faculty member in MCS to supervise them as they study a topic or do a project of interest.

**Prerequisite(s):**

15.00 credits including MCS*3030, MCS*3500, MCS*3620

**Restriction(s):**

Registration in B.Comm. MKMN or B.Comm. MKMN:C. Instructor consent required.

**Department(s):**

Department of Marketing and Consumer Studies
Mathematics

Department of Mathematics and Statistics

Suggested initial course sequence:

1. For students with 4U or OAC Calculus and expecting to pursue further studies in mathematics or the physical sciences: MATH*1200, MATH*1210.
2. For students interested in applications to the biological sciences: MATH*1080, MATH*2080.
3. For students not expecting to pursue further studies in mathematics: MATH*1030, one STAT*XXXX course.

MATH*1030 Business Mathematics F,W (3-0) [0.50]

Primarily intended for business and economics students, this course is designed to introduce and reinforce the essential mathematical skills needed to understand, analyze, and solve mathematical problems related to business and economics. Topics covered include basic algebra; functions, including a review of exponential and logarithmic functions; sequences and series with financial applications; limits; continuity; and differential calculus including derivatives, higher order derivatives, and curve sketching.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 4U Advanced Functions
Restriction(s): MATH*1080, MATH*1200 Not available to students registered in the BSC program.
Department(s): Department of Mathematics and Statistics

MATH*1080 Elements of Calculus I F,W (3-1) [0.50]

This course provides an introduction to the calculus of one variable with emphasis on mathematical modelling in the biological sciences. The topics covered include elementary functions, sequences and series, difference equations, differential calculus and integral calculus.

Prerequisite(s): 1 of 4U Advanced Functions, 4U Advanced Functions and Calculus or equivalent
Restriction(s): MATH*1000, MATH*1030, MATH*1200
Department(s): Department of Mathematics and Statistics

MATH*1160 Linear Algebra I F,W (3-0) [0.50]

This course provides an introduction to linear algebra in Euclidean space. Topics covered include: N-dimensional vectors, dot product, matrices and matrix operations, systems of linear equations and Gaussian elimination, linear independence, subspaces, basis and dimension, matrix inverse, matrix rank and determinant; eigenvalues, eigenvectors and diagonalization, orthogonalization and projections, linear transformations. Some fundamental proofs and applications of these topics will be included.

Prerequisite(s): 4U Calculus and Vectors or 4U Advanced Functions
Restriction(s): ENGG*1500, MATH*2150, MATH*2160
Department(s): Department of Mathematics and Statistics

MATH*1200 Calculus I F (3-1) [0.50]

This is a theoretical course intended primarily for students who expect to pursue further studies in mathematics and its applications. Topics include inequalities and absolute value; compound angle formulas for trigonometric functions; limits and continuity using rigorous definitions; the derivative and derivative formulas (including derivatives of trigonometric, exponential and logarithmic functions); Fermat's theorem; Rolle's theorem; the mean-value theorem; applications of the derivative; Riemann sums; the definite integral; the fundamental theorem of calculus; applications of the definite integral; the mean value theorem for integrals.

Prerequisite(s): 1 of 4U Calculus and Vectors, 4U Advanced Functions and Calculus or Grade 12 Calculus
Restriction(s): IPS*1500, IPS*1510, MATH*1000, MATH*1080
Department(s): Department of Mathematics and Statistics

MATH*1210 Calculus II W (3-1) [0.50]

This course is a continuation of MATH*1200. It is a theoretical course intended primarily for students who need or expect to pursue further studies in mathematics, physics, chemistry, engineering and computer science. Topics include inverse functions, inverse trigonometric functions, hyperbolic functions, indeterminate forms and l'Hopital's rule, techniques of integration, parametric equations, polar coordinates, Taylor and Maclaurin series; functions of two or more variables, partial derivatives, and if time permits, an introduction to multiple integration.

Prerequisite(s): 1 of MATH*1000, MATH*1080, MATH*1200
Restriction(s): IPS*1500, IPS*1510, MATH*2080
Department(s): Department of Mathematics and Statistics

MATH*2080 Elements of Calculus II W (3-1) [0.50]

This course will expand on integration techniques, and introduce students to difference and differential equations, vectors, vector functions, and elements of calculus of two or more variables such as partial differentiation and multiple integration. The course will emphasize content relevant to analyzing biological systems, and methods will be illustrated by application to biological systems.

Prerequisite(s): 1 of IPS*1500, MATH*1000, MATH*1080, MATH*1200
Restriction(s): IPS*1510, MATH*1210
Department(s): Department of Mathematics and Statistics

MATH*2130 Numerical Methods W (3-2) [0.50]

This course provides a theoretical and practical introduction to numerical methods for approximating the solution(s) of linear and nonlinear problems in the applied sciences. The topics covered include: solution of a single nonlinear equation; polynomial interpolation; numerical differentiation and integration; solution of initial value and boundary value problems; and the solution of systems of linear and nonlinear algebraic equations.

Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080
Department(s): Department of Mathematics and Statistics

MATH*2200 Advanced Calculus I F (3-0) [0.50]

The topics covered in this course include infinite sequences and series, power series, tests for convergence, Taylor's theorem and Taylor series for functions of one variable, planes and quadratic surfaces, limits, and continuity, differentiability of functions of two or more variables, partial differentiation, directional derivatives and gradients, tangent planes, linear approximation, Taylor's theorem for functions of two variables, critical points, extreme value problems, implicit function theorem, Jacobians, multiple integrals, and change of variables.

Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080
Department(s): Department of Mathematics and Statistics

MATH*2210 Advanced Calculus II W (3-0) [0.50]

This course continues the study of multiple integrals, introducing spherical and cylindrical polar coordinates. The course also covers vector and scalar fields, including the gradient, divergence, curl and directional derivative, and their physical interpretation, as well as line integrals and the theorems of Green and Stokes.

Prerequisite(s): MATH*2200
Department(s): Department of Mathematics and Statistics

MATH*2270 Applied Differential Equations F (3-1) [0.50]

This course covers the solution of differential equations that arise from problems in engineering and science. Topics include linear equations of first and higher order, systems of linear equations, Laplace transforms, series solutions of second-order equations, and an introduction to partial differential equations.

Prerequisite(s): ENGG*1500 or MATH*1160, (1 of IPS*1510, MATH*1210, MATH*2080)
Restriction(s): MATH*2170
Department(s): Department of Mathematics and Statistics

MATH*3100 Differential Equations II F (3-1) [0.50]

This course continues the study of differential equations. Power series solutions around regular singular points including Bessel equations are presented. First order linear systems and their general solution by matrix methods are thoroughly covered. Nonlinear systems are introduced along with the concepts of linearization, stability of equilibria, phase plane analysis, Lyapunov's method, periodic solutions and limit cycles. Two-point boundary value problems are discussed and an introduction to linear partial differential equations and their solution by separation of variables and Fourier series is given.

Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), (MATH*2170 or MATH*2270)
Department(s): Department of Mathematics and Statistics

MATH*3130 Abstract Algebra F (3-0) [0.50]

This course is an introduction to abstract algebra, covering both group theory and ring theory. Specific topics covered include an introduction to group theory, permutations, symmetric and dihedral groups, subgroups, normal subgroups and factor groups. Group theory continues through the fundamental homomorphism theorem. Ring theory material covered includes an introduction to ring theory, subrings, ideals, quotient rings, polynomial rings, and the fundamental ring homomorphism theorem.

Offering(s): Offered in even-numbered years.
Prerequisite(s): 1 of MATH*1160, MATH*2150, MATH*2160
Department(s): Department of Mathematics and Statistics
MATH*3160 Linear Algebra II W (3-0) [0.50]
The topics in this course include complex vector spaces, direct sum decompositions of vector spaces, the Cayley-Hamilton theorem, the spectral theorem for normal operators and the Jordan canonical form.
Prerequisite(s): (MATH*1160 or MATH*2160), 1.00 credits in MATH or STAT at the 2000 level or above
Department(s): Department of Mathematics and Statistics

MATH*3200 Real Analysis F (3-0) [0.50]
This course provides a basic foundation for real analysis. The rigorous treatment of the subject in terms of theory and examples gives students the flavour of mathematical reasoning and intuition for other advanced topics in mathematics. Topics covered include the real number line and the supremum property; metric spaces; continuity and uniform continuity; completeness and compactness; the Banach fixed-point theorem and its applications to ODEs; uniform convergence and the rigorous treatment of the Riemann integral.
Prerequisite(s): (MATH*1160 or MATH*2160), MATH*2210
Department(s): Department of Mathematics and Statistics

MATH*3240 Operations Research F (3-0) [0.50]
This is a course in mathematical modelling which has applications to engineering, economics, business and logistics. Topics covered include linear programming and the simplex method, network models and the shortest path, maximum flow and minimal spanning tree problems as well as a selection of the following: non-linear programming, constrained optimization, deterministic and probabilistic dynamic programming, game theory and simulation.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), 0.50 credits in statistics
Co-requisite(s): MATH*2200
Department(s): Department of Mathematics and Statistics

MATH*3260 Complex Analysis W (3-0) [0.50]
This course extends calculus to cover functions of a complex variable; it introduces complex variable techniques which are very useful for the physical sciences and engineering. Topics include complex differentiation, planar mappings, analytic and harmonic functions, contour integration, Taylor and Laurent series, the residue calculus and its application to the computation of trigonometric and improper integrals, conformal mapping and the Dirichlet problem.
Prerequisite(s): MATH*2200
Department(s): Department of Mathematics and Statistics

MATH*3510 Biomathematics W (3-0) [0.50]
This course will convey the fundamentals of applying mathematical modelling techniques to understanding and predicting the dynamics of biological systems. Students will learn the development, analysis, and interpretation of biomathematical models based on discrete-time and continuous-time models. Applications may include examples from population biology, ecology, infectious diseases, microbiology, and genetics.
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), (MATH*2170 or MATH*2270)
Department(s): Department of Mathematics and Statistics

MATH*4050 Topics in Mathematics I W (3-0) [0.50]
In this course students will discuss selected topics at an advanced level. It is intended mainly for mathematics students in the 6th to 8th semester. Content will vary from year to year. Sample topics include: probability theory, Fourier analysis, mathematical logic, operator algebras, number theory combinatorics, philosophy of mathematics, fractal geometry, chaos, stochastic differential equations.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): MATH*3200
Department(s): Department of Mathematics and Statistics

MATH*4060 Topics in Mathematics II W (3-0) [0.50]
In this course students will discuss selected topics at an advanced level as in MATH*4050, but with different choice of topic.
Offering(s): Offered in even-numbered years.
Prerequisite(s): MATH*3200
Department(s): Department of Mathematics and Statistics

MATH*4150 Topics in Mathematics III F,W (3-0) [0.50]
In this course students will discuss selected topics at an advanced level as in MATH*4050, but with different choice of topics.
Prerequisite(s): MATH*3200
Department(s): Department of Mathematics and Statistics

MATH*4200 Advanced Analysis F (3-0) [0.50]
This course covers advanced topics in analysis. It includes Lebesgue measure and integration, measure-theoretic probability, sequences and series of functions, the Stone-Weierstrass approximation theorem, compactness in function spaces and the implicit and inverse function theorems.
Offering(s): Offered in even-numbered years.
Prerequisite(s): MATH*3160, MATH*3200
Department(s): Department of Mathematics and Statistics

MATH*4240 Advanced Topics in Modeling W (3-0) [0.50]
This course presents selected advanced topics in mathematical modelling, such as model formulation, techniques of model analysis and interpretation of results. Topics may include discrete and continuous models, both deterministic and probabilistic.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): MATH*3240
Department(s): Department of Mathematics and Statistics

MATH*4270 Partial Differential Equations F (3-0) [0.50]
This course focuses on first and second-order partial differential equations, with examples and applications from selected fields such as physics, engineering and biology. Topics may include the wave equation, the heat equation, Laplace’s equation, linearity and separation of variables, solution by Fourier series, Bessel, Legendre and Green’s functions, an introduction to the method of characteristics and Fourier transforms. The classification of linear second-order partial differential equations is discussed.
Prerequisite(s): MATH*3100
Department(s): Department of Mathematics and Statistics

MATH*4440 Case Studies in Mathematics and Statistics W (3-0) [0.50]
This capstone course for the Mathematical Science major provides students with an opportunity to synthesize knowledge and utilize problem-solving skills accumulated over the course of their studies. The course will focus on case studies drawn from engineering, computer science, biology, life and physical sciences, medicine, and/or economics.
Prerequisite(s): At least 3.0 mathematics and/or statistics credits at the 3000 level or above.
Restriction(s): Restricted to students in the Mathematical Science major.
Department(s): Department of Mathematics and Statistics

MATH*4600 Advanced Research Project in Mathematics F,W (0-6) [1.00]
Each student in this course will undertake an individual research project in some area of mathematics, under the supervision of a faculty member. A written report and a public presentation of the project will be required.
Restriction(s): Approval of a supervisor and the course coordinator.
Department(s): Department of Mathematics and Statistics
### Microbiology

**School of Environmental Sciences**  
**Department of Molecular and Cellular Biology**  
**Department of Pathobiology**

#### MICR*2420 Introduction to Microbiology S,F,W (3-2) [0.50]
This course will introduce students to the diversity of microorganisms, including, bacteria, viruses, and fungi, and the impact of microbes on everyday life. The interactions of microorganisms with the biotic and abiotic worlds will be discussed. Topics will include the roles of microorganisms in host-pathogen interactions in disease, the beneficial aspects of microorganisms in bioremediation and food production, and their application in biotechnology.

**Prerequisite(s):** 4.00 credits including (1 of BIOL*1070, BIOL*1080, BIOL*1090, CHEM*1040)

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*2430 Methods in Microbial Culture and Physiology F,W (1.5-3) [0.50]
This course uses a hands-on approach to investigate microbial growth and factors that impact growth and the interactions of microbes with biotic and abiotic environments. This course will explore the ecological diversity of microorganisms of selected environments. Students will develop a wide range of microbiology-related laboratory skills.

**Prerequisite(s):** MICR*2420

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*3090 Mycology F (3-3) [0.50]
This course provides an introduction to the fungal lifestyle and to classification and evolution of the major groups of fungi, including microfungi, yeasts and other eukaryotic microbes. The characteristics of fungal cell structure, genetics and metabolism will be presented, and fungal reproduction and sporulation processes discussed with reference to the life cycles of representative forms. The ecological and economic importance of fungi will be demonstrated by considering fungal ecology, symbiotic relationships, mycotoxins and pathogenic fungi and industrial applications of fungi and yeasts. Laboratory work will provide familiarity with procedures for culturing, examining and identifying fungi and yeasts.

**Prerequisite(s):** BOT*2100 or MICR*2430  
**Equate(s):** BIOL*3050

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*3220 Plant Microbiology F (3-0) [0.50]
In this course the interaction between plants and microorganisms will be studied. Topics include molecular plant-microbe interactions, plant defenses, bacterial ice nucleation, interaction among plant microbes, root nodulation, mycorrhizae, wood decay, and decomposition of plant litter.

**Prerequisite(s):** BIOL*1040 or (BIOL*1070, BIOL*1090)

**Department(s):** School of Environmental Sciences

#### MICR*3230 Immunology F (3-0) [0.50]
This course provides an introduction to the immune response of the vertebrate host, the cells and tissues of the lymphoid system, humoral and cell-mediated immunity, the concept of immunity to diseases and current techniques in immunology.

**Prerequisite(s):** BIOL*1090, BIOL*2580

**Department(s):** Department of Molecular and Cellular Biology, Department of Pathobiology

#### MICR*3260 Microbial Adaptation W (3-1) [0.50]
In this course students examine the physiological responses of bacteria to their diverse and changing environments. By using information technologies to access and analyze the relevant research literature, students learn how and why researchers study this subject, and how research outcomes are evaluated.

**Prerequisite(s):** BIOL*3560, MBG*3080

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*3330 World of Viruses F (3-0) [0.50]
Viruses infecting many organisms will be covered in the context of their global impact on disease and history, beneficial uses of viruses, and their role in advances of molecular theory. A fundamental virology background will be achieved by understanding the diversity of viruses, their replication strategies and their interactions with the host in disease. The relevance of viruses in society will be highlighted by discussion of historical accounts and contemporary news articles.

**Prerequisite(s):** MBG*2050

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*3420 Microbial Diversity F (3-0) [0.50]
The cycling of elements (carbon, nitrogen, sulphur) within ecosystems involves the contributions of diverse microorganisms. This course will study the diversity of Bacteria and Archaea in selected ecosystems at an organismal level, investigate the metabolic and enzymatic diversity in microbes that contribute to and thrive within these environments, and examine the methodologies used to study the relationships and evolution of microorganisms within an ecosystem.

**Prerequisite(s):** BIOC*3560, MBG*2040, MICR*2430

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*3430 Microbiology Methods II W (1-3) [0.50]
This course will use a hands-on approach to investigate concepts and develop skills needed for the isolation, identification and classification of microorganisms. Classical, molecular, and bioinformatic techniques will be used to isolate and identify bacteria and viruses from natural environments.

**Prerequisite(s):** MBG*3080, MICR*2430

**Co-requisite(s):** MBG*3350

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*4010 Pathogenic Bacteriology W (3-0) [0.50]
This course focuses on the interactions between bacterial pathogens and host animals, including immune and inflammatory responses of the host's defense mechanisms. The structural and physiological characteristics of a number of important bacteria causing human and animal diseases are considered.

**Prerequisite(s):** MBG*3080, MCB*2050, MICR*3230

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*4280 Microbial Ecology W (3-0) [0.50]
This course is a study of natural microbial communities: their structure, function and the factors that impact them. The topics include standard and new techniques that are being developed for analyzing microbial communities, current research on microbial ecology of the ocean, the terrestrial and the human ecosystems, Gaia theory, astrobiology and the role of microbes in the evolution of life on Earth. This course covers the metagenomic approach and how it impacts the current view of the diversity of uncultured microbes in the biosphere, and the biochemical basis for extremophile survival and the application of this knowledge on protein structure-function relationships and biotechnology.

**Prerequisite(s):** MBG*2040, MICR*2430. (MBG*3350 is strongly recommended.)

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*4330 Molecular Virology W (2-3) [0.50]
This course will focus on molecular aspects of virus replication cycles and the diverse strategies used for replication of select RNA and DNA viruses. Virus-host interactions including tumour virology and host antiviral responses such as interferon and apoptosis will be discussed. Viral anti-host defence responses as well as recent advances in molecular virology and evolution will be also be covered.

**Prerequisite(s):** MICR*3330, (MICR*2430 is recommended)

**Department(s):** Department of Molecular and Cellular Biology

#### MICR*4430 Medical Virology W (3-0) [0.50]
A study of the interactions of animal viruses and their hosts and of important diseases of humans caused by viruses in different taxonomic groups. The emphasis is on aspects of pathogenesis, epidemiology, immune responses and control. Recent advances in the application of molecular biology to the development of diagnostic tests and vaccines will be included.

**Prerequisite(s):** MICR*3330

**Department(s):** Department of Pathobiology

---

Last Revision: March 4, 2016  
2016-2017 Undergraduate Calendar
**MICR*4520 Microbial Cell Biology F (3-0) [0.50]**

This course explores the structure-function relationships of macromolecular complexes and cellular ultrastructures involved in fundamental microbial processes. The structures of macromolecular machines will be considered from the perspective of the cellular requirements for survival in different environments, and will be discussed in the context of their integration into cell division and the bacterial cell cycle, as well as their exploitation as targets for antibiotics and other therapeutic approaches.

**Prerequisite(s):** BIOC*3560, MBG*3080  
**Restriction(s):** MICR*3270  
**Department(s):** Department of Molecular and Cellular Biology

**MICR*4530 Immunology II W (3-0) [0.50]**

This course will focus on advanced aspects of the structure and function of the vertebrate immune system in health and disease. Various topics including inflammation, hypersensitivity reactions, immune-mediated diseases such as allergy and autoimmunity, immune response to infection, vaccine development, experimental systems, immunoinformatics and antibody engineering will be discussed.

**Prerequisite(s):** MICR*3230  
**Restriction(s):** MICR*4230  
**Department(s):** Department of Molecular and Cellular Biology
Molecular and Cellular Biology

Department of Molecular and Cellular Biology

MCB*2580 Molecular Biology of the Cell F,W (4-0) [0.50]
This course will develop an understanding of the key concepts of the molecular biology of the cell, integrating principles of cell structure and function with the underlying molecular mechanism(s). Discussions will focus on aspects of gene regulation, genomics, cell cycle control, protein synthesis, intracellular protein trafficking and protein degradation in eukaryotic cells. Many of these concepts will be discussed in the context of how defects in cellular processes give rise to disease.
Prerequisite(s): BIOC*2580, MBG*2040
Department(s): Department of Molecular and Cellular Biology

MCB*3010 Dynamics of Cell Function and Signaling W (3-0) [0.50]
This course examines the dynamic properties of cells as they relate to cell-cell and cell-substrate interactions and elaborates on the fundamentals of intracellular signal transduction during these interactions. Topics will include the function and regulation of signalling modules, the cytoskeleton, and membrane component in the context of cellular interactions with other cells and with the extracellular matrix. These concepts will be integrated to develop a deeper understanding of dynamic cellular function within different tissue environments and physiological settings.
Prerequisite(s): BIOC*3560, MCB*2050
Department(s): Department of Molecular and Cellular Biology

MCB*4010 Advanced Cell Biology W (3-0) [0.50]
This course examines the cellular and molecular biology of signal transduction. The major theme is an understanding of how eukaryotic cells receive, transmit and respond to environmental signals. Topics will include cellular regulation of cell cycle progression and cell death as well as the consequences of deregulated signal transduction in terms of disease, primarily cancer.
Prerequisite(s): MCB*2050 or MCB*3010
Department(s): Department of Molecular and Cellular Biology

MCB*4050 Protein and Nucleic Acid Structure F (3-0) [0.50]
This course explores the relationship between the functions and the three dimensional structures of DNA, RNA and proteins. Topics covered include how these structures are determined, the principles governing their folding and architecture, why some proteins don’t fold at all, and the use of these structures to guide drug discovery. Practical skills are emphasized, including the use of bioinformatics and visualisation tools to analyse sequences and structures.
Prerequisite(s): BIOC*3560
Department(s): Department of Molecular and Cellular Biology

MCB*4510 Research Project in Molecular & Cellular Biology I S,F,W (0-12) [1.00]
This course involves independent research of a practical or theoretical nature on a specific topic in molecular and cellular biology. It is carried out under the supervision of an individual faculty member. Students should make arrangements with both a faculty advisor and the course coordinator at least one semester in advance of taking the course. The signature of the course coordinator will be required to select the course. A departmental registration form must be obtained from, and submitted to, the course coordinator no later than the 2nd class day of the semester in which the student is registered for the course.
Prerequisite(s): 1 of MBG*4500, MCB*4500, MICR*4310 . Normally, students must have completed 6 semesters in an appropriate program in the biological sciences. Minimum 70% cumulative average in science courses during the first 6 semesters of the relevant majors.
Restriction(s): Students in programs offering project courses cannot enroll in MCB*4510. Grade requirements may be waived in exceptional circumstances at the discretion of faculty advisor and course coordinator. Course coordinator consent required.
Department(s): Department of Molecular and Cellular Biology

MCB*4600 Topics in Molecular and Cellular Biology S,F,W (1-3) [0.50]
This course involves the independent study of a current topic in Molecular and Cellular Biology, selected from the recent research literature and involving a review and critical appraisal of the area. The course comprises independent library research, participation in weekly meetings, and written and oral presentations. Students should make arrangements with both faculty advisor and the course coordinator in a prior course selection period.
Prerequisite(s): MCB*3350 or equivalent laboratory experience at the discretion of the student's faculty advisor. Normally, students must have a minimum of 3.00 credits in 3000 or 4000 level BIOC, MBG, MCB OR MICR courses.
Restriction(s): Students in programs offering topics courses cannot enroll in MCB*4600. Coordinator consent required.
Department(s): Department of Molecular and Cellular Biology

Last Revision: March 4, 2016
Molecular Biology and Genetics

Department of Animal Biosciences
Department of Molecular and Cellular Biology
Department of Plant Agriculture
Department of Integrative Biology

MBG*1000 Genetics and Society W (3-1) [0.50]
This course covers the basic principles of genetics at work in human society. The roles of genes and inheritance in the biology of humans and the organisms with which we interact. Introduction to some of the social and ethical consequences of genetic knowledge and practice. This is a science course designed primarily for students in the Arts or Social and Applied Human Sciences.
Restriction(s): Students in the BAS, BSC and BSC(ENV) program cannot take this course for credit.
Department(s): Department of Molecular and Cellular Biology

MBG*2040 Foundations in Molecular Biology and Genetics F,W (4-0) [0.50]
This course will develop an understanding of the fundamental concepts in genetics, including patterns of inheritance, allelic variation, gene interaction, linkage, gene mapping and changes in chromosome structure and number. This will be followed by in-depth discussions on gene structure, replication, transcription, translation, recombination, mutation and DNA repair, and an introduction to gene regulation.
Prerequisite(s): 4.00 credits including BIOL*1090
Department(s): Department of Molecular and Cellular Biology

MBG*2400 Fundamentals of Plant and Animal Genetics F (3-2) [0.50]
Fundamental aspects of plant and animal genetics are covered in this course including the chromosomal basis of inheritance, natural and artificial selection, domestication, epigenetics and quantitative traits. Population dynamics and the effect of selection on allele frequencies will be introduced with examples from agricultural crop and animal species and companion animal species. Genomics will be introduced with an emphasis on the development and use of molecular genetic markers in marker assisted selection.
Prerequisite(s): (BIOL*1050 or BIOL*1070), BIOL*1090
Department(s): Department of Animal Biosciences

MBG*3050 Human Genetics W (3-3) [0.50]
This course is designed to introduce the student to the study of biological inheritance in humans. The course includes discussion of the genetic basis of human individual differences, gene frequencies in human populations, human behavioral genetics, human cytogenetics, biochemical genetics and developmental genetics, medical genetics and other aspects of human heredity.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology

MBG*3060 Quantitative Genetics W (3-0) [0.50]
This course examines the nature of Mendelian inheritance when extended to quantitative traits that are jointly influenced by the environment and the simultaneous segregation of many genes. Prediction of response to natural and artificial selection in populations will also be studied.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): MBG*2400, 0.50 credits in statistics
Department(s): Department of Animal Biosciences

MBG*3080 Bacterial Genetics F (3-0) [0.50]
This course focuses on the genetics of prokaryotic microorganisms and their viruses. Some major topics covered are: regulation of gene expression, analysis of bacterial and phage genomes, plasmids, transposable elements, and mutation studies.
Prerequisite(s): MBG*2040, MICR*2420
Department(s): Department of Molecular and Cellular Biology

MBG*3100 Plant Genetics W (3-2) [0.50]
This course examines reproduction in plants, genome organization, organelle and polyploid genetics, and analyses of mutations, genetic variation and linkage with classical and modern approaches.
Prerequisite(s): (MBG*2040 or MBG*2400), STAT*2040
Department(s): Department of Plant Agriculture

MBG*3350 Laboratory Methods in Molecular Biology I F,W (1-8) [0.75]
This course involves laboratory based instruction in the basic methodologies of Molecular Biology. Students will have the opportunity to develop technical skills and practical knowledge sufficient to perform basic procedures independently, and to diagnose and analyze experimental results obtained with these techniques.
Prerequisite(s): BIOC*2580, MCB*2050
Restriction(s): Registration in BSC(BIOC (major or minor), BIOC-C, BTOX-C, BTOX(C, BPHC, BPHC-C, MICR(major or minor), MICR-C, MBG(major or minor), PBTC, PLSC (major or minor), TOX, TOX-C
Department(s): Department of Molecular and Cellular Biology

MBG*3360 Laboratory Methods in Molecular Biology II W (0-8) [0.75]
This is a laboratory based course which builds on the techniques introduced in MBG*3350. Students will have the opportunity to develop technical skills and practical knowledge sufficient to perform advanced procedures independently, and to diagnose and analyze experimental results obtained with these techniques.
Prerequisite(s): 70% in MCB*2050 and 75% in MBG*3350
Department(s): Department of Molecular and Cellular Biology

MBG*3660 Genomics W (3-0) [0.50]
This course examines the genomes of eukaryotes and prokaryotes including how genomes are mapped and sequenced, the function of the genome and ethical issues arising from genomic information. How genomic data is used for understanding and treating human disease and for the study of evolution will also be discussed.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology

MBG*4020 Genetics of Companion Animals F (3-0) [0.50]
This course presents classical non-Mendelian phenomena, including analysis of chromosome breakage, transposition, imprinting and paramutation. Modern advances in gene regulation via epigenetic phenomena will be a central theme, focusing on chromatic remodeling, gene silencing and RNA interference as they pertain to organism development, with an emphasis on plants.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology

MBG*4040 Animal Breeding Methods and Applications W (3-2) [0.50]
Theoretical and scientific aspects of practical animal breeding programs which lead to genetic improvement of efficiency and profitability of animal production will be presented along with applications to livestock and poultry species. This course integrates quantitative genetics with concepts of statistics, economics, biology and biotechnology and expands into development of practical breeding plans.
Prerequisite(s): MBG*3060
Department(s): Department of Animal Biosciences

MBG*4040 Genetics and Molecular Biology of Development F (3-2) [0.50]
This course provides an examination of the genetic mechanisms that underlie organismal development. The molecular biology of cell determination and differentiation and the genetic control of morphogenesis and pattern formation will be emphasized.
Prerequisite(s): MCB*2050 or MCB*3101
Restriction(s): MBG*4070
Department(s): Department of Molecular and Cellular Biology

MBG*4080 Molecular Genetics F (3-0) [0.50]
In this course the topics studied will include the chemical nature of genetic material, transcription and the control of gene expression, and DNA cloning and the use of recombinant DNA molecules in modifying gene expression.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology

MBG*4110 Advanced Concepts in Genetics F (3-0) [0.50]
This course presents classical non-Mendelian phenomena, including analysis of chromosome breakage, transposition, imprinting and paramutation. Modern advances in gene regulation via epigenetic phenomena will be a central theme, focusing on chromatic remodeling, gene silencing and RNA interference as they pertain to organism development, with an emphasis on plants.
Prerequisite(s): MCB*2050
Department(s): Department of Molecular and Cellular Biology

MBG*4160 Plant Breeding F (3-2) [0.50]
This course examines the application of genetic principles to plant improvement. Topics include breeding objectives, mating systems, selection, and germplasm maintenance of horticultural and crop plants.
Prerequisite(s): (MBG*2040 or MBG*2400), STAT*2040
Department(s): Department of Plant Agriculture

2016-2017 Undergraduate Calendar
Last Revision: March 4, 2016
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBG*4240</td>
<td>Advanced Molecular Biology Techniques W</td>
<td>3-0</td>
<td>This course will examine advanced techniques and methods used in molecular biology, medicine and biotechnology such as genome, transcriptome and proteome analysis, contemporary genetic screens, genetic engineering, transgenic organisms and gene therapy. The course will highlight the most recent developments and applications of such techniques.</td>
<td>MCB*2050</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MBG*4270</td>
<td>DNA Replication, Recombination and Repair W</td>
<td>3-0</td>
<td>This course will examine the DNA transactions that determine the structure and function of the genome, with an emphasis on natural and synthetic mutagens and their mode of action, replication and recombination of genetic material, recognition and repair of DNA damage, and inherited and somatic genetic diseases arising from abnormal DNA metabolism.</td>
<td>MCB*2050</td>
<td>Department of Molecular and Cellular Biology</td>
</tr>
<tr>
<td>MBG*4300</td>
<td>Plant Molecular Genetics F</td>
<td>3-0</td>
<td>This course studies the molecular genetics of plants. The topics include: plant genome diversity and synteny; Arabidopsis thaliana genome, hormonal, environmental and developmental regulation of gene expression; chloroplast and mitochondrial genomes; and gene expression and silencing in transgenics. The course will be delivered using a lecture and paper discussion format. Students will learn and use a variety of computer techniques to search and analyze plant genome databases.</td>
<td>MBG<em>2040 or MBG</em>2400</td>
<td>Department of Plant Agriculture</td>
</tr>
</tbody>
</table>

Last Revision: March 4, 2016

2016-2017 Undergraduate Calendar
Music
School of Fine Art and Music

Ensembles

Chamber Ensembles

Choir (Symphonic Choir, Chamber Choir, Siren-Women's Choir)

Concert Winds

Contemporary Music Ensemble

Early Music Ensemble

Jazz Band

Note: All ensembles are not necessarily offered every semester.

Solo Performance (Applied Music): Private instruction is offered in piano, voice, orchestral instruments, and various jazz and early instruments. In order to register in Applied Music (MUSC*1500), students must arrange an audition with the School of Fine Art and Music at the time of course selection. Applied Music is restricted to students registered in a Music program (general, area of concentration; honours, major, or minor), in Semesters 1-4 (with the exception of Honours Majors in Music, who may audition to register in MUSC*1500 at any time in their studies).

Applied Music courses are designed to be taken in successive semesters. Registration in this sequence following an interruption of more than one semester requires permission of the Director of the School. Students may be required to re-apply before registering to continue in Applied Music. Students must achieve a minimum grade of 70% in Applied Music courses in order to proceed to the next level.

Applied Composition: Private instruction is offered in music composition. In order to register in Applied Composition (MUSC*2410), students must submit a portfolio of compositions (scores and recordings) with the School of Fine Art and Music at the time of course selection. Interviews are held prior to the first day of classes each semester (see School of Fine Art and Music for interview schedule). In order to enroll in Applied Composition, students must be registered in a Music program (Honours major or minor, or General, Area of Concentration).

Applied Composition courses are designed to be taken during successive Fall and Winter terms. If this sequence is interrupted for more than one semester, students may be required to reapply (an interview and submission of a portfolio) before registering to continue in Applied Composition. Students must achieve a minimum grade of 70% in Applied Composition courses in order to proceed to the next level.

MUSC*1060 Amadeus to Zeppelin: Music and Culture F,W (3-0) [0.50]

This course explores the place classical music holds in contemporary society, drawing upon texts from popular and cyber culture. Focusing on examples that engage with Western art music from 1100 – 1791 C.E., this course teaches students the skills necessary for media and information literacy while also developing music-historical knowledge and providing foundational training in university-level writing about music. No prior musical training is necessary.

Restrictions: MUSC*2280, MUSC*2600, MUSC*2610, MUSC*2620

Department(s): School of Fine Art and Music

MUSC*1090 Physics of Music F (3-0) [0.50]

This course is designed for arts and social science students with an interest or background in music. The fundamentals of vibrations and waves will be introduced and applied to a study of archetypal instruments. The psychoacoustic basis of pitch and loudness will be discussed. (Also listed as PHYS*1810.)

Offerings: Offered in even-numbered years.

Restrictions: PHYS*1810; students who have standing in any other 1000 level Physics course (except PHYS*1020 or PHYS*1600) may enrol in this only if they are completing an honours or general program in Music, in which case permission of the instructor is required.

Department(s): School of Fine Art and Music

MUSC*1130 Introduction to Musicianship S,F,W (0-8) [0.50]

Fundamentals of ear training, sight-singing, keyboard, and written skills (rudiments such as scales, intervals and basic chord identification) are introduced. Proficiency on an instrument is not required, but previous experience with note-reading is expected. MUSC*1130 cannot be counted toward a specialization in music.

Offerings: Offered through Distance Education format only.

Equates: MUSC*1120

Restrictions: MUSC*1180

Department(s): School of Fine Art and Music

MUSC*1180 Musicianship I F,W (3-0) [0.50]

Ear training through dictation and sight-singing exercises; C clefs; elementary improvisation and harmonization.

Department(s): School of Fine Art and Music

MUSC*1500 Applied Music I F,W (1-6) [0.50]

This course provides individual instruction in the technical and stylistic aspects of artistic solo instrumental or vocal performance. In order to register for this course, students must arrange an audition with the School of Fine Art and Music at the time of course selection.

Restrictions: Successful completion of an audition. Registration in semesters 1 to 4 (with the exception of BA Honours Music Majors, who may apply at any time). Registration in a Music Specialization.

Department(s): School of Fine Art and Music

MUSC*1510 Applied Music II S,F,W (1-6) [0.50]

This course is a continuation of MUSC*1500.

Prerequisite(s): A minimum grade of 70% in MUSC*1500.

Restrictions: Registration in a Music Specialization.

Department(s): School of Fine Art and Music

MUSC*2010 The Musical Avant-Garde F (3-0) [0.50]

This course offers an introduction to the avant-garde musical life of the 20th century including the works of Debussy, Stravinsky, Satie, Schoenberg, Cage, Cowell, and others.

Offerings: Offered in even-numbered years.

Department(s): School of Fine Art and Music

MUSC*2030 Music in Canada F (3-0) [0.50]

The background and development of musical life in Canada. Cultivation of understanding of Canadian music using recorded examples with emphasis on 20th-century compositions.

Offerings: Offered in odd-numbered years.

Department(s): School of Fine Art and Music

MUSC*2100 Creating Music on the Computer F,W (3-0) [0.50]

An introduction to computer technologies as they apply to the creation and manipulation of music. Topics will be drawn from the areas of sound synthesis and processing, recording, encoding, and transcription. The course will include a classroom and an applied component.

Prerequisite(s): MUSC*1180 or MUSC*2180. Some computer experience is recommended.

Department(s): School of Fine Art and Music

MUSC*2140 History of Jazz F,W (3-0) [0.50]

A survey of the major styles, personalities, and performances of the jazz tradition in terms of its social and cultural contexts through the examination of jazz texts and commentary, autobiographies of musicians, and recorded examples of important performances.

Offerings: Also offered through Distance Education format.

Department(s): School of Fine Art and Music

MUSC*2150 Music and Popular Culture F,W (3-0) [0.50]

A survey of the major genres, styles, personalities and performance of popular music primarily in the 20th-century through lectures, listening, discussion and reading. Issues such as the relationships between popular music and race, class, technology, and art will be examined. Technical knowledge of music is not required.

Offerings: Also offered through Distance Education format.

Department(s): School of Fine Art and Music

MUSC*2180 Musicianship II F,W (3-0) [0.50]

A continuation of MUSC*1180.

Prerequisite(s): MUSC*1180

Department(s): School of Fine Art and Music

MUSC*2220 Electronic Music: Music in the Digital Age W (3-0) [0.50]

This course will provide an introduction to digital music, from the initial "cybernetic" experiments of the 1950s to the evolution of software tools for synthesizing, processing, and analyzing sound to the development of music/audio-related hardware such as digital synthesizers, samplers, recorders, mixers, and workstations. An overview of musical genres utilizing digital technology will be presented (experimental, techno, dance, rap, ambient, etc.). Digital technology, including the revolutionary MIDI protocol, will be set into historical context, looking at musical and social developments and milestones, as well as related non-digital technology such as analog synthesizers and multi-track recorders.

Offerings: Offered in even-numbered years.

Department(s): School of Fine Art and Music

MUSC*2270 World Music W (3-0) [0.50]

This course offers an ethnomusicological introduction to the musical life of Sub-Saharan Africa, India, South America, the Middle East, Indonesia, and the Far East.

Restrictions: MUSC*2200, MUSC*2110

Department(s): School of Fine Art and Music
### MUSC*2330 Beethoven to Broadway: Music and Culture II F (3-0) [0.50]
This course explores the connections between contemporary culture and the history of Western Art Music. Focusing on material from 1750 to 1890, this course considers how cyber and popular culture engage with and often distort the historical origins of "classical" music. Students will further develop media and research literacy skills and will continue to hone their command of writers’ craft. The ability to read music is required for this course.

**Prerequisite(s):** MUSC*1060, MUSC*1180 is recommended  
**Restriction(s):** MUSC*2600, MUSC*2610, MUSC*2620  
**Department(s):** School of Fine Art and Music

### MUSC*2380 Classical Music from Concert Hall to Cinema S (3-0) [0.50]
This is a music appreciation course intended for non-music majors. This course explores the sonic codes of western art music ("Classical" music) as they developed in their original contexts, as well as their use and meaning in today’s film soundtracks. The works chosen for study are those likely to be encountered in modern concert and opera halls and are selected primarily from the Baroque, Classical, and Romantic eras.

**Offering(s):** Offered through Distance Education format only.  
**Prerequisite(s):** 2.00 credits  
**Restriction(s):** MUSC*1060, Not available to students registered in a Music specialization.  
**Department(s):** School of Fine Art and Music

### MUSC*2410 Applied Composition I F,W (0-2) [0.25]
This course is a continuation of MUSC*2410.

**Prerequisite(s):**  
**Restriction(s):**  
**Department(s):** School of Fine Art and Music

### MUSC*2420 Applied Composition II F,W (1-6) [0.50]
This course is a continuation of MUSC*2420.  
**Prerequisite(s):** A minimum grade of 70% in MUSC*2410.  
**Restriction(s):** Registration in a Music Program (Honours major or minor, General).  
**Department(s):** School of Fine Art and Music

### MUSC*2500 Applied Music III S,F,W (1-6) [0.50]
A continuation of MUSC*1510.

**Prerequisite(s):** (MUSC*1180 or MUSC*2180), a minimum grade of 70% in MUSC*1510. (MUSC*1180 or MUSC*2180 may be taken as corequisite)  
**Restriction(s):** Registration in a Music specialization.  
**Department(s):** School of Fine Art and Music

### MUSC*2510 Applied Music IV S,F,W (1-6) [0.50]
A continuation of MUSC*2500.

**Prerequisite(s):** A minimum grade of 70% in MUSC*2500  
**Restriction(s):** Registration in a Music specialization.  
**Department(s):** School of Fine Art and Music

### MUSC*2530 Instrumental Ensembles I F,W (0-2) [0.25]
The study and performance of selected instrumental music through participation in one of the School's ensembles: Chamber Ensemble, Concert Winds, Contemporary Music Ensemble, Jazz Band, or the Early Music Ensemble. In order to register for an ensemble, the student must arrange for an audition with the School of Fine Art and Music. Auditions will be held prior to the first day of classes each Fall and Winter semester. Students must check with the School of Fine Art and Music office for audition dates. Students are encouraged to audition for an ensemble in the Fall semester and to participate in it for both Fall and Winter semesters. Not all ensembles will be able to accept new members in Winter. Consult the School of Fine Art and Music for further information.

**Restriction(s):** Instructor consent required. Successful completion of an audition.  
**Department(s):** School of Fine Art and Music

### MUSC*2540 Instrumental Ensembles II F,W (0-2) [0.25]
A continuation of MUSC*2530.

**Prerequisite(s):** MUSC*2530  
**Restriction(s):** Instructor consent required.  
**Department(s):** School of Fine Art and Music

### MUSC*2550 Choral Ensembles I F,W (0-2) [0.25]
The study and performance of selected choral literature through participation in one of the School's ensembles: the University of Guelph Symphonic Choir, the Chamber Choir, or Siren. In order to register for an ensemble, the student must arrange for an audition with the School of Fine Art and Music. Auditions will be held prior to the first day of classes each Fall and Winter semester. Students must check with the School of Fine Art and Music office for audition dates. Students are encouraged to audition for an ensemble in the Fall semester and to participate in it for both Fall and Winter semesters. Not all ensembles will be able to accept new members in Winter. Consult the School of Fine Art and Music for further information.

**Equate(s):** MUSC*2520  
**Restriction(s):** Instructor consent required. Successful completion of an audition.  
**Department(s):** School of Fine Art and Music

### MUSC*2560 Choral Ensembles II F,W (0-2) [0.25]
A continuation of MUSC*2550.  
**Prerequisite(s):** MUSC*2550  
**Equate(s):** MUSC*2520  
**Restriction(s):** Instructor consent required.  
**Department(s):** School of Fine Art and Music

### MUSC*2570 Keyboard Accompaniment I F,W (0-2) [0.25]
Development of sight-reading and accompaniment skills for pianists in close coordination with vocal and instrumental applied music students.

**Prerequisite(s):** MUSC*2510 on piano.  
**Restriction(s):** Instructor consent required.  
**Department(s):** School of Fine Art and Music

### MUSC*2580 Keyboard Accompaniment II F,W (0-2) [0.25]
A continuation of MUSC*2570.  
**Prerequisite(s):** MUSC*2570  
**Department(s):** School of Fine Art and Music

### MUSC*2660 Materials of Music I F (3-0) [0.50]
This course is a study of music theory and analysis. It builds on rudiments and musicianship skills developed in MUSC*1180 and introduces students to materials of music including melodic construction, phrase structure, linear counterpoint, rhythmic organization, and diatonic harmony. Students will work on both applied and analytical assignments.

**Prerequisite(s):** MUSC*1180  
**Restriction(s):** MUSC*1250, MUSC*2360  
**Department(s):** School of Fine Art and Music

### MUSC*2670 Materials of Music II W (3-0) [0.50]
This course continues the study of music theory and analysis. Students move on to learn about and work with more advanced concepts of tonal harmony and music analysis. The second half of the course introduces students to post-tonal music (20th-century). Students will work on both applied and analytical assignments.

**Prerequisite(s):** MUSC*2180, MUSC*2660  
**Restriction(s):** MUSC*2360, MUSC*2370  
**Department(s):** School of Fine Art and Music

### MUSC*3150 Music in London F (3-0) [0.50]
A lecture/seminar course that will examine in depth choral and instrumental music of major composers from representative periods and media, performed at London, England. Compositions will be analyzed in relation to their stylistic technique, formal structure, and historical place in the repertoire of music. A professor of music will present weekly classes each Fall and Winter semester. Students must check with the School of Fine Art and Music. Auditions will be held prior to the first day of classes each Fall and Winter semester. Not all ensembles will be able to accept new members in Winter. Consult the School of Fine Art and Music for further information.

**Restriction(s):** Admission to the London Semester.  
**Department(s):** School of Fine Art and Music

### MUSC*3410 Applied Composition III F,W (1-6) [0.50]
This course is a continuation of MUSC*2420.  
**Prerequisite(s):** A minimum grade of 70% in MUSC*2420 and (2 of MUSC*2530, MUSC*2540, MUSC*2550, MUSC*2560).  
**Restriction(s):** Registration in a Music Program (Honours major or minor, General).  
**Department(s):** School of Fine Art and Music

### MUSC*3420 Applied Composition IV F,W (1-6) [0.50]
This course is a continuation of MUSC*3410.  
**Prerequisite(s):** A minimum grade of 70% in MUSC*3410.  
**Restriction(s):** Registration in a Music Program (Honours major or minor, General).  
**Department(s):** School of Fine Art and Music
### MUSC*3500 Advanced Music Ensemble I F,W (0-3) [0.25]

The study and performance of selected instrumental or vocal chamber music through participation in a small ensemble under the guidance of a supervising instructor. Students will organize the ensemble, which normally consists of two to six vocalists and/or instrumentalists, design a project with the instructor, and submit the proposal to the Director of the School of Fine Art and Music for approval by the last day of course selection in Fall (or Winter) or Winter (for the following Fall). A form is available from the School office for this purpose.

**Prerequisite(s):** MUSC*2500, (2 of MUSC*2530, MUSC*2540, MUSC*2550, MUSC*2560)

**Restriction(s):** Registration in a Music Program (Honours major or minor, General, Area of Concentration).

**Department(s):** School of Fine Art and Music

### MUSC*3550 Advanced Music Ensemble II F,W (0-3) [0.25]

A continuation of MUSC*3500. Students will organize the ensemble, which normally consists of two to six vocalists and/or instrumentalists, design a project with the instructor, and submit the proposal to the Director of the School of Fine Art and Music for approval by the last day of course selection in Fall (or Winter) or Winter (for the following Fall). A form is available from the School office for this purpose.

**Prerequisite(s):** MUSC*2500, (2 of MUSC*2530, MUSC*2540, MUSC*2550, MUSC*2560)

**Restriction(s):** Registration in a Music Program (Honours major or minor, General, Area of Concentration).

**Department(s):** School of Fine Art and Music

### MUSC*3630 Tragedy, Technology, and Torture: Music Post 1900 W (3-0) [0.50]

This course examines music from the late 19th century (Debussy and post-romantic composers) to the present from both historical and theoretical perspectives.

**Prerequisite(s):** MUSC*2600, (MUSC*2330 or MUSC*2620)

**Department(s):** School of Fine Art and Music

### MUSC*3730 Topics in Jazz and Improvised Music F (3-0) [1.00]

This course provides a seminar experience in focussed topics related to jazz and improvised music. Topics will normally include some combination of the following: jazz/improvisation history and theory, critical studies in jazz/improvised music. Subject matter will vary according to the instructor.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** 7.50 credits including MUSC*2100 or MUSC*2140

**Department(s):** School of Fine Art and Music

### MUSC*3740 Topics in Popular Music Studies F (3-0) [1.00]

This course examines the rise and impact of the cultural industries on production and consumption of music, the development of transnational popular music, and the role popular music plays in the politics of social identity.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** 7.50 credits including (MUSC*1180 or MUSC*2180), MUSC*2150

**Department(s):** School of Fine Art and Music

### MUSC*3800 Topics in Music History/Analysis W (3-0) [1.00]

This course examines selected topics in music history, performance practice, analysis, and music within its cultural context.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** 7.50 credits including MUSC*2670, MUSC*3630

**Department(s):** School of Fine Art and Music

### MUSC*3820 Topics in Ethnomusicology F (3-0) [1.00]

Topics for this course will normally include some combination of the following: specific world music tradition, ethnomusicological issues, theories, or methods. Subject matter will vary according to the instructor.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** 7.50 credits including (MUSC*1180 or MUSC*2180), MUSC*2270

**Department(s):** School of Fine Art and Music

### MUSC*3860 Topics in Digital Music F (3-0) [1.00]

This is a course which focuses on a specific area of digital music production. Topics may include advanced audio production, advanced MIDI sequencing, advanced music notation/instrumentation, synthesis and signal processing, music-oriented computer programming, or interactive computer music. Normally, a major creative project will be completed and presented as an outcome of the course.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** 7.50 credits including MUSC*2100

**Restriction(s):** Instructor consent required.

**Department(s):** School of Fine Art and Music

### MUSC*3880 Topics in Music Pedagogy W (3-0) [1.00]

This course examines current philosophical trends in music education, and the application of various theories of music learning. Students will be asked to process conflicting ideas as presented through readings, class discussion, and their own experience as learners.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** 7.50 credits including MUSC*2180, MUSC*2660

**Department(s):** School of Fine Art and Music

### MUSC*4200 Independent Project in Music S,F,W (3-0) [0.50]

This is an independent learning opportunity in music for qualified students working in consultation with a faculty advisor. The project may take the form of a course of readings and assignments, enabling the student to investigate a topic in music not otherwise available in the curriculum. It may also include a creative component (such as composition) or an experiential learning component (such as a professional performance opportunity, or a community outreach opportunity). A written proposal, signed by the faculty advisor, must be submitted to the Director of the School for approval by the last day of course selection in the previous semester.

**Prerequisite(s):** 3.00 credits in Music

**Restriction(s):** Instructor consent required. Registration in an honors major or minor in music or an area of concentration (General Program) in Music.

**Department(s):** School of Fine Art and Music

### MUSC*4401 Honours Music Recital S,F,W (3-0) [0.50]

First part of the two-semester course MUSC*4401/2. Refer to MUSC*4401/2 for course description.

**Prerequisite(s):** Completion of the music core.

**Restriction(s):** Permission of the School and registration in an honours major in music.

**Department(s):** School of Fine Art and Music

### MUSC*4402 Honours Music Recital S-F,F-W,W-S [1.00]

Qualified instrumentalists, vocalists, and composers who have completed the applied music or applied composition course sequences are eligible to present a full-length recital. In the case of composers it is the responsibility of the student to organize performers to present the music. Recital proposals must be submitted to the Director of the School, on the provided form, by the last day of course selection in the previous semester. This is a two-semester course offered over consecutive semesters. When selecting the course, MUSC*4401 must be selected in the first semester and MUSC*4402 in the second semester. A grade will not be assigned to MUSC*4401 until MUSC*4402 has been completed.

**Prerequisite(s):** Completion of the music core.

**Restriction(s):** Permission of the School and registration in an honours major in music.

**Department(s):** School of Fine Art and Music

### MUSC*4402 Honours Music Recital S,F,W (3-0) [0.50]

Second part of the two-semester course MUSC*4401/2. Refer to MUSC*4401/2 for course description.

**Prerequisite(s):** Completion of the music core.

**Restriction(s):** Permission of the School and registration in an honours major in music.

**Department(s):** School of Fine Art and Music
<table>
<thead>
<tr>
<th><strong>MUSC*4450 Honours Seminar in Music W (3-0) [1.00]</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Honours Seminar in Music teaches advanced research methods common to a range of musical investigations: musicology (including ethnomusicology, popular music and jazz), music theory, music pedagogy, and musical creation. In addition, the Honours Seminar in Music allows students to engage in individual research with concentrated energy through a one semester/one credit course in a supportive peer environment. Students will develop a research project proposal for approval by the instructor in the semester prior to enrolling in this course.</td>
</tr>
<tr>
<td><strong>Prerequisite(s):</strong></td>
</tr>
<tr>
<td><strong>Restriction(s):</strong></td>
</tr>
<tr>
<td><strong>Department(s):</strong></td>
</tr>
</tbody>
</table>
NANO*1000 Introduction to Nanoscience F (3-0) [0.50]
This course introduces students to the emerging field of nanoscience. It's representation in popular culture and journalism will be contrasted with the present and near future realities in the field. Current industrial and business applications will be discussed. Guest lectures will be given by faculty performing research in the field. The course also aims to help students in their transition to the academic life by emphasizing skills and values such as academic integrity and problem solving and by actively connecting their first-year science core courses to the field of nanoscience.

Prerequisite(s): 4U Chemistry or 4U Physics
Restriction(s): Registration in Nanoscience Major.
Department(s): Department of Chemistry

NANO*2000 Synthesis and Characterization of Nanomaterials I F (3-3) [0.50]
This course explores the structural, mechanical, and electronic properties of matter. Methods to fabricate nanostructured materials such as nanoparticles, nanocomposites, thin films, polymers, and ferrofluids will be discussed. Techniques that have been developed to analyze these materials are also discussed, including scattering, microscopy and spectroscopy.

Prerequisite(s): CHEM*1050, [IPS*1510 or (MATH*1210, PHYS*1010)]
Restriction(s): Registration in Nanoscience Major.
Department(s): Department of Chemistry

NANO*2100 Synthesis and Characterization of Nanomaterials II W (3-3) [0.50]
The structural, mechanical, and electronic properties of matter will be discussed. Topics will include methods to fabricate nanostructured materials such as nanoparticles, nanocomposites, thin films, polymers and ferrofluids, as well as techniques that have been developed to analyze these materials, including scattering, microscopy and spectroscopy

Prerequisite(s): NANO*2000
Department(s): Department of Physics

NANO*3200 Nanolithographic Techniques W (3-3) [0.50]
Lithographic techniques applied at the micrometer and nanometer scale are key to the production of devices for the electronic and related industries. Projection and proximity techniques (XUV, electron, and ion beams) and writing processes (electron beam, ion beam, and scanned probe) will be explored. Emphasis will also be placed on soft lithographic techniques such as stamping and dip-pen nanolithography.

Prerequisite(s): NANO*2100
Department(s): Department of Chemistry

NANO*3300 Spectroscopy of Nanomaterials W (3-3) [0.50]
The interaction of nanostructured matter with light gives rise to some of its most important observable properties. The absorption and fluorescence properties of nanomaterials will be studied. Particular attention will be paid to experiments which require nanoscale path lengths, such as IR spectroscopy of monomolecular thin films. Local spectroscopic probes with nanoscale resolution such as Near-field Scanning Optical Microscopy (NSOM) and Scanning Probe Spectroscopy (SPS) will be explored.

Prerequisite(s): NANO*2100, (CHEM*3860 or PHYS*3230)
Department(s): Department of Chemistry

NANO*3500 Thin Film Science F (3-3) [0.50]
The deposition and growth of thin layers of materials is an important process in the production of many devices. This course will study the various methods by which thin films are grown including physical and chemical vapor deposition, molecular beam epitaxy, atomic layer epitaxy, and self-assembled monolayers. Experimental techniques for analyzing the properties of thin films will also be discussed.

Prerequisite(s): NANO*2100
Department(s): Department of Chemistry

NANO*3600 Computational Methods in Materials Science F (3-3) [0.50]
Many computational techniques have been brought to bear on the study of nanostructured matter. This course will present several of these techniques and will introduce a number of computational packages that can be used to study matter. Monte Carlo and ab initio methods along with molecular dynamics simulations will be studied, with an emphasis upon the implementation of the software packages and the appropriate interpretation of the results.

Prerequisite(s): MATH*2160, MATH*2170, CIS*1500 is highly recommended
Co-requisite(s): CHEM*3860 or PHYS*3230
Department(s): Department of Physics

NANO*4100 Biological Nanomaterials F (3-3) [0.50]
Biological systems provide a rich range of examples of specialized chemical systems that are structured on the nanoscale. Nanofibres, microtubules, viruses, and ribosomes are examples of systems that can be studied from the perspective of nanoscience. Using these systems or developing artificial systems which mimic their functionality are important growth areas in nanoscience and will be explored in this course.

Prerequisite(s): NANO*2100
Department(s): Department of Physics

NANO*4200 Topics in Nanomaterials W (3-0) [0.50]
This course will introduce students to special topics in nanostructured materials. The course will illustrate how to design, create, characterize and utilize new materials in which the presence of a nanoscale structural elements results in new properties of fundamental and technological importance.

Prerequisite(s): NANO*3300, NANO*3500, (CHEM*3860 or PHYS*3230)
Department(s): Department of Chemistry

NANO*4700 Concepts in Quantum Computing F (3-0) [0.50]
This course introduces concepts in quantum computation and quantum information.

Prerequisite(s): MATH*1160, (CHEM*3860 or PHYS*3230)
Department(s): Department of Chemistry

NANO*4900 Advanced Studies in Nanoscience W (1-5) [0.50]
This course will guide students through the primary literature of the field with readings from recent achievements. Students will select individual topics on which they will prepare seminars and written reports.

Prerequisite(s): 1.50 credits in NANO courses at the 3000 level.
Restriction(s): PHYS*4300
Department(s): Department of Physics

NANO*4910 Nanoscience Research Project I S,F,W (0-12) [1.00]
Students will work with faculty in their laboratories on research topics of current interest. A final written paper and oral presentation of the work will be given by the students.

Prerequisite(s): 1.50 credits in NANO courses at the 3000 level.
Restriction(s): Instructor consent required.
Department(s): Department of Chemistry

NANO*4920 Nanoscience Research Project II S,F,W (0-12) [1.00]
Students will work with faculty in their laboratories on research topics of current interest. A final written paper and oral presentation of the work will be given by the students.

Prerequisite(s): NANO*4910
Restriction(s): Instructor consent required.
Department(s): Department of Chemistry
### Neuroscience

#### NEUR*4000 Current Issues in Neuroscience F (3-0) [0.50]
This course will consist of guest lectures offered by faculty who are working in the field and will complement the seminars given by the students on topics that they have prepared in studying the primary literature. Students will also prepare a major paper on a neuroscience topic.

- **Prerequisite(s):** 14.00 credits
- **Restriction(s):** Enrolment restricted to Neuroscience minor.
- **Department(s):** Department of Biomedical Sciences

#### NEUR*4401 Research in Neurosciences S,F,W (0-6) [0.50]
This is the first part of the two-semester course NEUR*4401/2. Refer to NEUR*4401/2 for the course description.

- **Prerequisite(s):** 14.00 credits
- **Restriction(s):** BIOM*4510, BIOM*4521/2, NEUR*4450. Instructor consent required.
- **Restriction(s):** Enrolment restricted to Neuroscience minor.
- **Department(s):** Department of Biomedical Sciences

#### NEUR*4401/2 Research in Neurosciences S,F,F,W,W-S (0-6) [1.00]
In this course, students will conduct independent research of a current topic in any of the biomedical neurosciences: (such as anatomy, physiology, pharmacology, toxicology, molecular biology, biochemistry). Students work under the supervision of individual faculty. Faculty consent must be obtained prior to being admitted into the course by the course coordinator. This is a two-semester course offered over consecutive semesters. When you register for this course you must select NEUR*4401 in the first semester and NEUR*4402 in the second semester. A grade will not be assigned in NEUR*4401 until NEUR*4402 has been completed.

- **Prerequisite(s):** 14.00 credits
- **Restriction(s):** BIOM*4510, BIOM*4521/2, NEUR*4450. Instructor consent required.
- **Restriction(s):** Enrolment restricted to Neuroscience minor.
- **Department(s):** Department of Biomedical Sciences

#### NEUR*4402 Research in Neurosciences S,F,W (0-6) [0.50]
This is the second part of the two-semester course NEUR*4401/2. Refer to NEUR*4401/2 for the course description.

- **Prerequisite(s):** NEUR*4401
- **Restriction(s):** BIOM*4510, BIOM*4521/2, NEUR*4450. Enrolment restricted to Neuroscience minor.
- **Department(s):** Department of Biomedical Sciences

#### NEUR*4450 Research in Neurosciences S,F,W (0-12) [1.00]
In this course, students will conduct independent laboratory research on a current topic in any of the biomedical neurosciences (such as anatomy, physiology, pharmacology, toxicology, molecular biology, biochemistry). Students work under the supervision of individual faculty. Faculty consent must be obtained prior to being admitted into the course by the course coordinator.

- **Prerequisite(s):** 14.00 credits
- **Restriction(s):** BIOM*4510, BIOM*4521/2, NEUR*4401/2. Instructor consent required. Enrolment restricted to Neuroscience minor.
- **Department(s):** Department of Biomedical Sciences
### Nutrition

**Department of Animal Biosciences**  
**Department of Family Relations and Applied Nutrition**  
**Department of Human Health and Nutritional Sciences**

#### NUTR*1010 Introduction to Nutrition F,W (3-0) [0.50]

This course is an introduction to human nutrition, with major emphasis on nutrients and their dietary sources, functions, and relationships to health. Topics will include the energy-containing nutrients, selected vitamins and minerals and weight management. We will also explore current popular topics and emerging diet-disease relationships.

**Offering(s):** Also offered through Distance Education format.  
**Restriction(s):** This is a Priority Access Course. For B.A.Sc. and FCS minor and some restrictions may apply during some time periods.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*2050 Nutrition Through the Life Cycle F (3-0) [0.50]

This course explores how individual, family, community and societal factors influence nutritional needs and dietary intake from infancy through older adulthood. Implications for nutrition care and community-level programs are discussed.

**Offering(s):** Also offered through Distance Education format.  
**Prerequisite(s):** NUTR*1010  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*2150 Introduction to Nutritional and Food Sciences F,W (3-0) [0.50]

This interdisciplinary course provides an introduction to the Food and Nutritional Sciences from both historical and modern perspectives. Major themes are the nutritional and functional properties of food, nutrient assimilation, food preservation and safety, and the interactions between food processing, diets and health. (Also listed as FOOD*2150.)

**Prerequisite(s):** (BIOL*1040 or BIOL*1080), CHEM*1040  
**Equate(s):** FOOD*2150  
**Restriction(s):** FOOD*2010, FOOD*3090. Not available to students registered in B.A.Sc. AHN major.  
**Department(s):** Department of Food Science

#### NUTR*3070 Nutrition and Physical Activity Interventions W (3-0) [0.50]

This course examines the development, implementation, and evaluation of: a) integrated interventions to improve both nutrition and physical activity behaviours; and, b) interventions to improve physical activity behaviours of people of different ages in various settings. Various theories and models used to develop nutrition and physical activity interventions will be examined.

**Prerequisite(s):** FRHD*3070, NUTR*2050  
**Restriction(s):** Registration in the B.A.Sc. program.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*3090 Clinical Nutrition I W (3-3) [1.00]

The epidemiology, pathophysiology, and role of nutrition will be considered in the prevention and management of several major chronic conditions including cardiovascular diseases, disorders of energy balance and diabetes mellitus. There is an emphasis on developing the skills for high risk individual management approaches.

**Prerequisite(s):** (BIOM*2000 or BIOM*3200), FRHD*3070, NUTR*2050, (NUTR*3190 or NUTR*3210), STAT*2090  
**Co-requisite(s):** FRHD*3400  
**Restriction(s):** NUTR*3040. Registration is limited to students registered in the B.A.Sc. AHN major.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*3110 Food Security W (3-0) [0.50]

The prevalence of food insecurity in Canada and selected industrialized and non-industrialized countries is examined. The course will review environmental, social, and other factors associated with food insecurity and take critical look at the effectiveness of programs and policies designed to improve food security.

**Prerequisite(s):** 9.50 credits including NUTR*2050  
**Restriction(s):** Registration is limited to students registered in the B.A.Sc. AHN major.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*3150 Aging and Nutrition W (3-0) [0.50]

This course provides an in-depth study of the determinants of food intake and nutrient recommendations for aging adults. Specific consideration will be given to eating environments and physiological changes that influence access, preparation, and consumption of food by older adults living in the community and in facilities. An emphasis will be placed on chronic disease prevention and management.

**Prerequisite(s):** 1 of NUTR*1010, NUTR*2150, NUTR*3210  
**Restriction(s):** NUTR*2070  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*3210 Fundamentals of Nutrition S,F,W (3-0) [0.50]

This is the foundation course for the study of nutrition. The occurrence, uptake and metabolic role of nutrients will be discussed in relation to growth, reproduction and longevity in human subjects, domestic animals and other species.

**Offering(s):** Also offered through Distance Education format.  
**Prerequisite(s):** BIOC*2580  
**Department(s):** Department of Human Health and Nutritional Sciences

#### NUTR*3350 Micronutrients, Phytochemicals and Health F (3-0) [0.50]

The course emphasizes the biochemical basis for the dietary essentiality of vitamins and minerals. The course extends the fundamentals of nutrition to include conditional essentiality of micronutrients, biochemical individuality and the use of micronutrient supplementation to promote human and animal health. Both plant and animal sources of nutrients are discussed.

**Prerequisite(s):** NUTR*3210  
**Department(s):** Department of Human Health and Nutritional Sciences

#### NUTR*3360 Lifestyles Genomics F (3-0) [0.50]

This course explores how genes and lifestyle choices (in particular diet and exercise) interact to affect cell and tissue function, and impact human health. These concepts will be examined through in-depth discussions of common metabolic diseases. The course is designed to highlight the integrative and inter-connected cellular, molecular, and physiological mechanisms underlying these conditions.

**Prerequisite(s):** BIOC*2580, BIOL*1080, MBG*2040  
**Restriction(s):** NUTR*4350  
**Department(s):** Department of Human Health and Nutritional Sciences

#### NUTR*3390 Applied Nutritional and Nutraceutical Sciences I F (3-3) [0.75]

This course will introduce and develop key concepts of the applied aspects of the Nutritional and Nutraceutical Sciences. Enrichment of foods with health protectant chemicals, establishing biomarkers and risk indicators of disease, testing of bioavailability/efficacy to support basic health claims, health assessment and nutrigenomic analysis as adjuvants in the effective use of functional foods and nutraceuticals, and regulatory and marketing/consumer issues are topics that will be addressed.

**Prerequisite(s):** NUTR*3210  
**Restriction(s):** Registration in the B.Sc. NANS major or minor and the B.Sc. FFAN minor.  
**Department(s):** Department of Human Health and Nutritional Sciences

#### NUTR*4010 Nutritional Assessment F (3-0) [0.50]

This course examines the principles and methods used in nutritional assessment of individuals and populations in health and disease states. Dietary, anthropometric and biochemical techniques will be primary components. Nutritional screening, advanced techniques for body composition assessment, physical exam and clinical indicators will also be addressed. Significant independent learning will be required.

**Prerequisite(s):** 14.50 credits including NUTR*2050, NUTR*3210  
**Restriction(s):** Registration in the B.A.Sc. AHN major.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*4040 Clinical Nutrition II F (3-0) [0.50]

This course is a continuation of NUTR*3090. This lecture based course is concerned with the application of nutrition to clinical conditions. Methods and content of medical nutrition therapy in prevention and treatment of gastrointestinal, renal, hepatic diseases and catabolic states will be emphasized. Ethical issues in nutrition management of disease and health professional practice will be addressed.

**Prerequisite(s):** 14.50 credits including, {1 of BIOM*2000, (BIOM*3100 or BIOM*3110) , BIOM*3200}, (NUTR*3040 or NUTR*3090)  
**Restriction(s):** Registration in the B.A.Sc. AHN major.  
**Department(s):** Department of Family Relations and Applied Nutrition

#### NUTR*4070 Nutrition Education F (3-0) [0.50]

This course covers methods and approaches in nutrition education with particular emphasis on community programs in nutrition for different age groups; dietary counselling; nutrition education in the preschool, in prenatal and other specialized programs.

**Prerequisite(s):** FRHD*3400, NUTR*2050  
**Restriction(s):** This is a Priority Access Course. Registration may be restricted to students registered in B.A.Sc. majors and the Family and Child Services minor during certain time periods.  
**Department(s):** Department of Family Relations and Applied Nutrition
NUTR*4090 Functional Foods and Nutraceuticals W (3-0) [0.50]

The course examines the relation of functional foods and nutraceuticals (FFN) to foods and drugs. The safety and efficacy of individual FFN products, and the regulatory issues that influence the development and commercialization of FFN in global markets are emphasized. (Also listed as FOOD*4090.)

Prerequisite(s): NUTR*3210
Equate(s): FOOD*4090
Department(s): Department of Human Health and Nutritional Sciences, Department of Food Science

NUTR*4120 Applied Clinical Skills W (0-3) [0.50]

This is a laboratory-based course which will enable students to gain skills in independently completing nutrition assessments and care plans of individuals and groups as they would be expected to do as nutrition professionals. Students will comprehensively assess nutritional status, apply knowledge of human physiology, pathophysiology, medical terminology and nutritional assessment to diagnose nutritional problems/issues and formulate, implement and evaluate a nutrition intervention.

Prerequisite(s): NUTR*4010, NUTR*4040
Restriction(s): NUTR*4850. Restricted to students in B.A.Sc. AHN with at least 75% grade average in all completed NUTR and FRHD courses.
Department(s): Department of Family Relations and Applied Nutrition

NUTR*4210 Nutrition, Exercise and Energy Metabolism F (3-0) [0.50]

In this course energy metabolism will be considered under the headings: thermodynamic principles, energy deposition and hormonal control of metabolism; nutrition, exercise and environmental influences on energy balance and enzyme adaptation; nutrition and exercise in the control of body composition.

Prerequisite(s): NUTR*3210, (1 of BIOM*3200, HK*3810, HK*3940)
Department(s): Department of Human Health and Nutritional Sciences

NUTR*4320 Nutrition and Metabolic Control of Disease W (3-0) [0.50]

This course provides a discussion of disorders of metabolism, either inherited or acquired, in which nutrition plays a major role in the etiology, pathogenesis, or treatment. The nutritional control of the affected metabolic pathways and the interaction of nutrition with exercise, drugs and gene therapy will be presented.

Prerequisite(s): NUTR*3210, (1 of BIOM*3200, HK*3810, HK*3940, ZOO*3210, ZOO*3620)
Department(s): Department of Human Health and Nutritional Sciences

NUTR*4330 Applied Nutritional and Nutraceutical Sciences II W (3-3) [0.75]

In this course laboratory and other investigational techniques are covered, together with their underlying concepts. The course is designed to enhance understanding of the design and use of nutraceuticals for human and animal health.

Prerequisite(s): NUTR*3330, NUTR*3390, (HK*3810 or HK*3940)
Restriction(s): Registration in B.Sc. NANS major or minor.
Department(s): Department of Human Health and Nutritional Sciences

NUTR*4360 Current Issues in Nutrigenomics W (3-0) [0.50]

This course discusses controversial and/or emerging topics in Human Health and Nutritional and Nutraceutical Sciences as it relates to nutrigenomics.

Prerequisite(s): NUTR*3210, (1 of BIOM*3200, HK*3810, HK*3940)
Department(s): Department of Human Health and Nutritional Sciences

NUTR*4510 Toxicology, Nutrition and Food F (3-0) [0.50]

This course examines the role of foods, herbs and nutraceuticals as sources of antinutrients, natural toxins and environmental contaminants. The impact of toxic exposures on nutritional status, the impact of nutritional status on safe metabolism of toxins, and the use of this knowledge in the design of functional foods are also examined. Assessing the risk of genetically modified foods and radioactive contamination of a food supply.

Prerequisite(s): NUTR*3210
Department(s): Department of Human Health and Nutritional Sciences

NUTR*4810 Applied Human Nutrition Thesis I U (3-0) [0.50]

Planning, developing and writing a research proposal under individual faculty supervision. Topic to be decided by the student in consultation with the supervisory faculty member before course selection or registration period.

Prerequisite(s): FRHD*3070, NUTR*2050, (NUTR*3040 or NUTR*3090)
Restriction(s): Instructor consent required.
Department(s): Department of Family Relations and Applied Nutrition

NUTR*4850 Field Experience in Nutrition Education W (2-4) [0.50]

This course offers a supervised experience in nutrition education and a seminar. Students will apply principles of program planning, nutrition education theory and professional behaviour in a community setting. Placements may be arranged in institutional or community health settings, educational facilities, social services, or food industry. Seminar topics include professional ethics, exploring values, and issues management.

Prerequisite(s): FRHD*3070, NUTR*4040, NUTR*4070
Restriction(s): NUTR*4120 Instructor consent required.
Department(s): Department of Family Relations and Applied Nutrition

NUTR*4900 Selected Topics in Human Nutrition W (3-0) [0.50]

This course requires reading and discussion on selected areas in human nutrition and its application; formal class reports and term papers. Primarily for Applied Human Nutrition majors.

Prerequisite(s): FRHD*3070, (NUTR*3040 or NUTR*3090), NUTR*4010
Restriction(s): Registration in B.A.Sc. AHN major.
Department(s): Department of Family Relations and Applied Nutrition

NUTR*4910 Applied Human Nutrition Thesis II U (6-0) [1.00]

The student will conduct and write an undergraduate thesis under the direction of a faculty member.

Prerequisite(s): NUTR*4810
Department(s): Department of Family Relations and Applied Nutrition

Last Revision: March 4, 2016
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAGR*2070</td>
<td>Introduction to Organic Agriculture W (3-3)</td>
<td>1.00</td>
<td>Students will be exposed to the scale of the organic industry today, including the factors driving interest in organics for both producers and consumers. The foundational principles underlying contemporary organic agriculture will be presented and first hand experience of current organic practices will be provided. In addition, this course will rely on small group mentoring to stimulate independent, learner-centered analysis of selected topics in organic agriculture.</td>
<td>5.00 credits, OAGR<em>2050, OAGR</em>3030</td>
<td>Department of Plant Agriculture, School of Environmental Sciences</td>
</tr>
<tr>
<td>OAGR*4050</td>
<td>Design of Organic Production Systems F (6-0)</td>
<td>1.00</td>
<td>Students will apply organic agriculture principles to the design and concept of agricultural operations, taking into account the interactions of soils, plants and animals with environmental and managerial factors.</td>
<td>OAGR*2070</td>
<td>Department of Plant Agriculture, School of Environmental Sciences</td>
</tr>
<tr>
<td>OAGR*4180</td>
<td>Social Issues in Organic Agriculture W (2-2)</td>
<td>0.50</td>
<td>This interdisciplinary course will examine the major social issues in organic agriculture from both a global and local perspective, with an emphasis on synthesis and integration. Issues will include globalization, sustainability, gender, food, social movements, the organic agri-food system, rural communities, and the role of the family farm.</td>
<td>1 of EDRD<em>3400, ( OAGR</em>3030, OAGR<em>3130, SOC</em>2080 ), EDRD<em>4180, REXT</em>4180</td>
<td>School of Environmental Design and Rural Development</td>
</tr>
</tbody>
</table>
**PATH*3040 Principles of Parasitology W (3-3) [0.50]**
Parasitism is the most common biological association on the planet; virtually all organisms are parasitized by numerous parasites and many, such as the protists that cause malaria, are responsible for serious medical and/or veterinary diseases. This course will provide an in depth introduction to parasites and parasitism by exploring common protists, helminths and arthropods that infect animals and humans globally. The nature of parasitism will be explored by examining the development and transmission of many common parasitic agents, including their pathogenesis, zoonotic potential, diagnosis and treatment options.

**Prerequisite(s):** 10.00 credits including at least 1.50 credits in biology.

**Department(s):** Department of Pathobiology

---

**PATH*3610 Principles of Disease S,F,W (3-0) [0.50]**
A course designed for students with particular interests in nutrition and biology. The course presents basic concepts of disease in the cells, tissues, organs and fluids of the body. Emphasis will be on disease processes resulting from physical, toxic and microbiological and other causes.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1.50 credits in biology

**Restriction(s):** PATH*3600

**Department(s):** Department of Pathobiology

---

**PATH*4100 Diseases of Aquatic Animals F (2-2) [0.50]**
A course designed to familiarize the fisheries manager, researcher or veterinarian with the basic principles of diagnosis, prevention, and control of disease of free living and captive aquatic animals, with emphasis on fish.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** PATH*3610

**Department(s):** Department of Pathobiology
Pharmacology

Department of Biomedical Sciences.

For course listings and descriptions see Biomedical Sciences.

Additional course listings may be found in the course descriptions for Veterinary Medicine and Toxicology.
Philosophy

Department of Philosophy

Note: Specific descriptions of all courses to be offered in a given semester will be available from the Department of Philosophy in each preceding semester. Students are advised to consult these descriptions. Different sections of a course often emphasize different aspects of that course.

1. All 2000 level philosophy courses are open to students who have completed 2.00 credits or who have completed one of PHIL*1000, PHIL*1010, PHIL*1050.

2. Unless otherwise noted, 3000 level philosophy courses are open to students who have completed at least 1.50 credits in philosophy or 7.50 credits.

3. For most 4000 level courses, students are expected to have completed at least 1.00 credits in philosophy at the 3000 level. Some 4000 level credits have specific prerequisites, e.g., PHIL*4230, PHIL*4360 (see course descriptions in the following pages). If a student is taking several credits with such prerequisites, then the number of other philosophy credits which need to be completed may exceed the general requirement of 1.00 credits at the 3000 level. PHIL*4310 is designed to be open to seventh and eighth semester students who have no previous philosophy credit. If in doubt about being well prepared for a particular course, the student should consult with either the instructor or the chair of the department.

4. Students may receive credit for PHIL*1000, PHIL*1010 and PHIL*1050, but only one may be counted towards the minimum number of philosophy credits required for a degree in philosophy. Students intending to proceed in the discipline at the 2000 level are advised to take only 0.50 credits at the 1000 level.

PHIL*1000 Introductory Philosophy: Major Texts F,W (3-0) [0.50]
This course will deal with enduring philosophical questions through an exploration of primary texts in the history of philosophy. Topics covered may include the nature of knowledge and the different types of knowledge, the relationship between the mind and the body, and the nature of good and evil. Texts and topics will vary with the instructor; students are advised to consult the Philosophy department's website: http://www.uoguelph.ca/philosophy/.

Department(s): Department of Philosophy

PHIL*1010 Introductory Philosophy: Social and Political Issues F,W (3-0) [0.50]
This course introduces philosophy through an examination of important issues in politics and society, such as punishment, animal rights, discrimination, war and violence, equality and property. These issues may be introduced through contemporary or historical philosophical writings.

Department(s): Department of Philosophy

PHIL*1050 Introductory Philosophy: Basic Problems F,W (3-0) [0.50]
This course introduces students to philosophy through the exploration of basic perennial philosophical problems and questions, such as whether there is free will, a God, objective right and wrong, genuine knowledge of the world, and other topics. The readings for the course will consist primarily of 20th century philosophical writing.

Department(s): Department of Philosophy

PHIL*2030 Philosophy of Medicine F (3-0) [0.50]
Medicine is a philosophical, not merely a practical, empirical enterprise. This course covers philosophical concepts which are widely used to evaluate health and health-practices: autonomy, consent, mind, will, rights, harm, fairness, dignity, truth and even ‘health’ itself. Issues central to health and health care practice include: the nature of professional-client relationships, genetic counseling, passive and active euthanasia, pharmacology and behaviour modification, resource allocation, and the special set of issues raised by reproductive technologies.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2060 Philosophy of Feminism I W (3-0) [0.50]
This course examines metaphysical, epistemological and ethical issues in feminist philosophy, including such topics as the nature and consequences of patriarchy, human nature, sexual divisions of labour, women's studies, rationalizations of inequalities and explorations into a contemporary feminist agenda for social, political and economic changes.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2070 Philosophy of the Environment W (3-0) [0.50]
Environmental Philosophy asks questions such as: How has ‘nature’ been conceptualized in the Western philosophical tradition, in aesthetics, science, and ethics? What arguments have been offered for the view that humans are superior among creatures? What connections might there be between the ways that nature, humankind, and animals have been conceptualized and the ways that humans have tended to act toward the non-human natural environment? This course may cover such topics as: climate change, resource extraction and justice, biotechnology, obligations to future generations, risk assessment and discount rates, species lost, conservation vs. preservation.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2100 Critical Thinking F,W (3-0) [0.50]
This course is designed to develop clarity of thought and method in the analysis and construction of arguments. By contrast to PHIL*2110, the emphasis here is upon informal principles of critical thinking and arguments stated in terms of ordinary language. Topics include the nature and methods of arguing, classification, definition and fallacies.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2110 Elementary Symbolic Logic W (3-0) [0.50]
This course studies the basic principles and techniques of formal logic. The analysis of the logical structure of sentences and arguments is explored, together with the fundamental principles of elementary sentential logic and quantification.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2120 Ethics F,W (3-0) [0.50]
Philosophical ethics is the attempt to systematize, explain, and justify the standards by which we evaluate our conduct as persons. The course may include treatment of controversial ethical issues such as abortion, euthanasia, war, and the treatment of animals and will cover many of the following questions: can we expect to find a single, universal code of ethics that applies to all human beings, or do such codes vary for each society, or even for each individual? What are the roles of reason and emotion in ethics? Is morality grounded on a principle, and if so, what is it? Are there any traits of character that one must have to be a good person? Given that traditional ethical codes have been almost universally sexist, how must ethics be refashioned in order for women to achieve equal recognition?

Offering(s): Also offered through Distance Education format.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2130 Philosophy of Religion F (3-0) [0.50]
This course considers various philosophical questions concerning religion, such as arguments for the existence of God, the problem of evil, the meaning of religious language, the significance of mystical experience and human immortality.

Offering(s): Offered in even-numbered years.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2140 History of Greek and Roman Philosophy F (3-0) [0.50]
A survey of the beginnings of Western philosophy, this course will focus on themes such as the nature of reality, the ways we might come to have knowledge, and the good life for human beings. This course will typically consider such thinkers as Socrates, Plato, Aristotle, Epictetus, Cicero and Seneca, although the specific course content will vary with the instructor.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2160 Modern European Philosophy to Hume W (3-0) [0.50]
This course surveys European philosophy from the Renaissance (15th century) to David Hume (mid-18th century).

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

PHIL*2170 Existentialism W (3-0) [0.50]
Existentialism is a philosophy built around the experience of human freedom. This course focuses on the character of the subject who makes choices, and on the personal and political responsibilities that attach to the making of decisions. The course will examine this and other themes associated with Existentialism through nineteenth and twentieth century representatives, which may include Kierkegaard, Sartre, de Beauvoir, Camus and others.

Offering(s): Offered in odd-numbered years.

Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)

Department(s): Department of Philosophy

Last Revision: March 4, 2016
2016-2017 Undergraduate Calendar
PHIL*2180 Philosophy of Science F (3-0) [0.50]
As a system of knowledge, science develops laws and theories to explain, predict, understand, and control empirical phenomena. This course introduces students to many of the challenging assumptions, foundations, and implications of science. Topics include the nature of scientific knowledge, the structure of scientific theories, the distinction between science and pseudo-science, whether there is a scientific method, and how social and political processes influence the way science develops.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*2220 Philosophy and Literary Art F (3-0) [0.50]
The course will engage with literary art forms (fiction, drama, poetry, and film) for philosophical goals. Possible emphases include the use of literary works to express philosophical topics; philosophical investigations of the nature of literary art forms, and philosophies of interpretation of such art forms (e.g., classical poetics, hermeneutics, deconstruction, analytical aesthetics).
Offering(s): Also offered through Distance Education format. Offered in odd-numbered years.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*2250 Knowledge, Mind and Language F (3-0) [0.50]
This course is an introduction to the nature and possibility of knowledge, in connection with the nature of mind and the role of language in shaping experience. This is a central area of philosophy.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*2280 Key Concepts in Political Philosophy F (3-0) [0.50]
This course presents an in-depth treatment of one or more key concepts in political philosophy. Among the many possible concepts that the course may address are those of freedom, equality, power, community, identity, autonomy, justice, rights, political obligation, representation, authority, legitimacy, exploitation, emancipation, and development. These concepts may be explored historically or through contemporary political and/or philosophical debates.
Prerequisite(s): 0.50 credits in either Philosophy or Political Science
Restriction(s): POLS*2000
Department(s): Department of Philosophy

PHIL*2350 Selected Topics in Philosophy I U (3-0) [0.50]
The topics for this course will vary from one offering to the next, and will deal with material not available in regular courses. Topics for this course will be chosen from the instructor's research in progress. Students are encouraged to consult the departmental website for course content and availability: http://www.uoguelph.ca/philosophy/.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*2370 Introduction to Metaphysics W (3-0) [0.50]
This course studies major theories of the nature of reality, and of issues and problems that arise in the investigation of fundamental features of the world. Texts read may be either historical or contemporary. Among possible topics explored in the course are materialism, free will, and determinism, the nature of time, and the position of consciousness in the world.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*2600 Business and Professional Ethics W (3-0) [0.50]
This course examines ethical and evaluative issues relating to business and professional practices, and is intended for students registered in a science or professional program, but without a background in philosophy. Topics to be explored include the nature of values and ethical systems, duties and rights, private and public goods, the consumer movement, social marketing, corporate social accounting, corporate right and professional responsibility.
Prerequisite(s): 2.00 credits or (1 of PHIL*1000, PHIL*1010, PHIL*1050)
Department(s): Department of Philosophy

PHIL*3050 Philosophy of Art W (3-0) [0.50]
This course considers various philosophical questions concerning art such as the nature of a work of art, the nature of beauty, the relationship between the artist and the audience, the task of the art critic, the social function of art.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3060 Medieval Philosophy W (3-0) [0.50]
The ideas of central figures in philosophy from the Patristic period (3rd century A.D.) to the early Renaissance (14th century) will be examined through original sources.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3080 History of Modern European Philosophy from Kant F (3-0) [0.50]
A survey of European philosophy from Immanuel Kant (mid-18th century) to the late 19th century.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3090 Philosophy of Kant W (3-0) [0.50]
Kant revolutionized the philosophical tradition of investigating objectivity (asking what the nature of reality is, in itself) by investigating subjectivity (asking how knowledge is possible for us). This course will typically examine one of Kant’s Critiques and/or a central philosophical theme that appears in Kant's works.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3130 Contemporary British and American Philosophy F (3-0) [0.50]
Ludwig Wittgenstein and other Vienna philosophers of the early 20th century believed that much of traditional philosophy was meaningless word-play, and that the reason many people didn't see this is that it's difficult to distinguish the meaningless from the meaningful. Their attempts to do so - taking what Richard Rorty called “the linguistic turn” - shaped much of 20th century philosophy in English-speaking countries. This course will critically examine the original movement, some attempts to apply its ideas in various areas such as epistemology, ethics and philosophy of mind, and some ideas that arose in reaction to the original movement, e.g., so-called “ordinary language philosophy,” neopragmatism and naturalized philosophy.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3170 Critical Debates in the Philosophy of Science W (3-0) [0.50]
This course studies specialized questions about science within a broad intellectual and social context. Contested issues regarding the nature of science, its aims and methods, and science's relation to society will be critically examined. Past offerings of the course have examined such topics as realism and antirealism, naturalized explanations, the unity/disunity of science, and feminist approaches to science.
Offering(s): Offered in even-numbered years.
Prerequisite(s): PHIL*2180
Department(s): Department of Philosophy

PHIL*3180 Philosophy of Mind W (3-0) [0.50]
This course is a survey of central issues and positions in contemporary philosophy of mind. Topics may include: the nature of the mind and its relation with the brain; the puzzle of conscious experience; and the problem of mental content.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3190 Theory of Knowledge I F (3-0) [0.50]
This course is an advanced introduction to the central issues in epistemology, such as the nature of knowledge and how it differs from mere true belief. Possible topics include skepticism, theories of justification and rationality, self-knowledge and the sources of belief.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3200 Contemporary European Philosophy W (3-0) [0.50]
A survey of philosophical movements mainly centred in continental Europe from the late 19th-century to the present.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy
PHIL*3210 Women in the History of Philosophy F (3-0) [0.50]
This course will examine selected works of women philosophers and their contributions to the major philosophical debates of their day. The philosophers covered may be drawn from any period in the history of philosophy, up to, and including, the 20th century. The topics covered may range across feminist issues, epistemology, metaphysics, and ethics. Because texts and topics will vary with the instructor, students are advised to consult the departmental website: http://www.uoguelph.ca/philosophy/
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level or PHIL*2060
Department(s): Department of Philosophy

PHIL*3230 Issues in Social and Political Philosophy W (3-0) [0.50]
Social or political philosophy is the area of philosophy concerned with the morality of major social institutions such as the state, the economy, and the family. This course may engage in the detailed examination of one or more of the following questions: what justifies the state's claim to authority? What are the proper dimensions of individual liberty? What levels of material and social equality are required for a society to be just? These questions will be pursued through reading historical and/or contemporary philosophical texts.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3250 Philosophy of Language F (3-0) [0.50]
This course will explore the relationship between human beings and language, and between language and the world. In particular, it may address such fundamental questions as: What is it about the way in which we use words that gives them the meanings they have? And what is the relationship between words and objects to which they refer? Authors studied may include representatives from the analytic and/or continental traditions in philosophy.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3280 21st Century Philosophy F (3-0) [0.50]
This course is an introduction to the most current philosophical texts and movements developed since the beginning of the 21st Century. Students will be taught to understand and work creatively with the most recent ideas in the discipline. Material covered will focus almost exclusively on the philosophical texts written in or after the year 2000.
Prerequisite(s): 1.50 credits in Philosophy
Department(s): Department of Philosophy

PHIL*3350 Selected Topics in Philosophy II U (3-0) [0.50]
The topics for this course will vary from one offering to the next, and will deal with material, such as Philosophy of History, Philosophy of Social Science and advanced Philosophy of Religion generally arising from the instructor's current research interests. This course gives students a chance to explore topics and texts not usually covered in other courses at a more advanced level than PHIL*2350. Students are encouraged to consult the departmental website for course content and availability: http://www.uoguelph.ca/philosophy/
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3410 Major Texts in the History of Philosophy W (3-0) [0.50]
This course will consider central and continuing philosophical issues through an exploration of primary texts in the history of philosophy. The readings and periods stressed will vary from year to year, but could cover significant and enduring texts from the ancient period right up to the 21st century. Texts and topics will vary with the instructor; students are advised to consult the Philosophy department's website: http://www.uoguelph.ca/philosophy/
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3420 Philosophical Problems of Religion F (3-0) [0.50]
The course offers a detailed examination of major problems and writings in the philosophy of religion.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.50 credits in Philosophy, including one of PHIL*2130, PHIL*3910, PHIL*3920
Department(s): Department of Philosophy

PHIL*3450 Ethics in the Life Sciences W (3-0) [0.50]
This course is an advanced introduction to the ethical implications of values and practices guiding research in the life sciences. Fields of discussion may include ethics in health care, genetics and human reproduction, environmental sciences, agriculture, animal husbandry, animal welfare, and food technologies. Material covered will be drawn from current books and articles by philosophers in this rapidly expanding area.
Prerequisite(s): 1.50 credits in Philosophy. PHIL*2120, PHIL*2180 are recommended.
Department(s): Department of Philosophy

PHIL*3710 Directed Reading F,W (3-0) [0.50]
This course is intended as an intensive course of reading chosen by the student in consultation with the faculty member.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Restriction(s): Instructor consent required.
Department(s): Department of Philosophy

PHIL*3720 Directed Reading F,W (3-0) [0.50]
This course is intended as an intensive course of reading chosen by the student in consultation with the faculty member.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Restriction(s): Instructor consent required.
Department(s): Department of Philosophy

PHIL*3910 Indian Philosophy F (3-0) [0.50]
This course provides an analysis of selected primary sources of Indian philosophy in translation, from the Vedics Upanishads to the “integral yoga” of Sri Aurobindo. Emphasis will be on the basic inspirational works of Hinduism and Buddhism, and their respective views on the ultimate nature of reality, the self, suffering, freedom, ignorance and enlightenment.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3920 Chinese Philosophy W (3-0) [0.50]
This course analyzes selected primary sources of Chinese philosophy, in translation, from the Ching to Mao Tse-tung. Emphasis will be on the foundational works of Confucianism, Taoism, Ch'an (or Zen) Buddhism, and Neo-Confucianism, concerning such issues as the ultimate nature of being, non-being and human destiny, proper government of the self, the family and society, and the principles and practice of enlightenment.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3930 African Philosophy F (3-0) [0.50]
An introduction to the philosophical traditions of Africa, part historical and part contemporary. The shorter historical section will cover some themes from the thought of ancient Egypt, early Christian and Islamic philosophy in North Africa and precolonial traditions from West Africa. The greater section of the course will deal with philosophical movements in Africa since the 1960's, as well as their implications for African American thought and philosophy generally.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*3930 African Philosophy F (3-0) [0.50]
An introduction to the philosophical traditions of Africa, part historical and part contemporary. The shorter historical section will cover some themes from the thought of ancient Egypt, early Christian and Islamic philosophy in North Africa and precolonial traditions from West Africa. The greater section of the course will deal with philosophical movements in Africa since the 1960's, as well as their implications for African American thought and philosophy generally.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 1.50 credits in Philosophy or 7.50 credits
Department(s): Department of Philosophy

PHIL*4040 Advanced Philosophy of the Environment U (3-0) [0.50]
This course is an exploration in detail of central debates in environmental philosophy. Possible topics include: genetic modification of plants and animals, duties to future generations, obligations to distant global others, the ethics of encounters, animal welfare, trans-species communication, restoration and conservation projects, aesthetics, virtue ethics and stewardship.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level. PHIL*2070 recommended.
Department(s): Department of Philosophy

PHIL*4060 Philosophy of Feminism II U (3-0) [0.50]
This course is an advanced study of problems in feminist philosophy. The course may cover specific topics or the work of one or more feminist philosophers. Topics may be drawn from feminist ethics, epistemology, and/or postmodernism. Texts and topics will vary with the instructor; students are advised to consult the Philosophy department's website: http://www.uoguelph.ca/philosophy/
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level or PHIL*2060
Department(s): Department of Philosophy
PHIL*4110 Symbolic Logic U (3-0) [0.50]
A study of issues and techniques beyond the level of elementary sentential logic and quantification. A consideration of some topics in logical theory. An extension of material explored in PHIL*2110, with special focus on philosophical aspects or implications of formal logic.
Prerequisite(s): PHIL*2110, 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4160 Philosophy Field Course F (3-0) [1.00]
This variable content course addresses an issue which is relevant to the contemporary world from a range of philosophical perspectives. The course is built on research into the issue, including material gathered during a 1-2 week field trip which is held in the summer immediately preceding the semester in which the student takes the course. The field trip is a mandatory component of the course, one for which the student assumes the costs of transportation, food and lodging.
Prerequisite(s): 13.00 credits and a minimum cumulative average of 70%.
Restriction(s): Restricted to students in Philosophy major or minor, or Ethics in the Life Sciences minor. Instructor consent required.
Department(s): Department of Philosophy

PHIL*4230 Social and Political Philosophy U (3-0) [0.50]
This is an advanced level course that examines in detail selected historical or contemporary treatments of specific issues in social and political philosophy.
Prerequisite(s): PHIL*2120 or PHIL*3230, 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4270 Recent Philosophical Issues U (3-0) [0.50]
This course studies primary philosophical texts since 1965. The focus of the course will alternate between analytic texts and issues and continental texts and issues. Texts and topics will vary with the instructor; students are advised to consult the Philosophy department's website: http://www.uoguelph.ca/philosophy/
Prerequisite(s): 2.00 credits in Philosophy including 1.00 credits at the 3000 level
Department(s): Department of Philosophy

PHIL*4310 Applied Ethics U (3-0) [0.50]
An advanced study of specific problems in applied ethics. This is an intensive course designed for philosophy majors as well as for seventh and eighth semester students who have had no previous philosophy course.
Department(s): Department of Philosophy

PHIL*4340 Advanced Ethics U (3-0) [0.50]
This course offers an advanced study of problems in ethical theory. This course will examine contemporary and perennial issues in ethics through recent or historical texts. Texts and topics will vary with the instructor; students are advised to consult the Philosophy department's website: http://www.uoguelph.ca/philosophy/
Prerequisite(s): PHIL*2120, 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4360 Theory of Knowledge II U (3-0) [0.50]
An examination of central problems concerning the nature of knowledge. In some offerings the selection will emphasize problems in the Philosophy of Language.
Prerequisite(s): 2.50 credits in Philosophy or PHIL*3190
Department(s): Department of Philosophy

PHIL*4370 Metaphysics U (3-0) [0.50]
An advanced study of problems concerning the nature of reality.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4390 Selected Topics in Philosophy III U (3-0) [0.50]
The topics for this seminar course will vary from one offering to the next, generally arising from the instructor's current research interests. This course gives students a chance to explore topics and texts not usually covered in other courses, and to become engaged with Philosophy department research. Students are encouraged to consult the Philosophy department website for course content and availability.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4400 Major Texts in Philosophy U (3-0) [0.50]
Advanced study of a major text in philosophy not treated in either PHIL*4410 or PHIL*4420.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4410 Major Texts in Philosophy U (3-0) [0.50]
Advanced study of a major text in philosophy not treated in either PHIL*4400 or PHIL*4420.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4420 Major Texts in Philosophy U (3-0) [0.50]
Advanced study of a major text in philosophy not treated in either PHIL*4400 or PHIL*4410.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Department(s): Department of Philosophy

PHIL*4450 Philosophy Honours Seminar U (3-0) [1.00]
This research seminar provides philosophy majors with an opportunity to apply the knowledge gained in their previous studies to an in-depth, independent research paper. This course permits deep engagement through time for high-level critical reflection. Students will work closely with the instructor to prepare a conference-style and article-length paper. Topics or themes on offer will vary according to the expertise of the faculty member who leads the seminar; students will develop their focus in consultation with the instructor and through in-class presentations. This seminar is recommended for students who have achieved a minimum 78% average in their philosophy courses.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Restriction(s): 75% average in all Philosophy course attempts. Registration restricted to Philosophy majors.
Department(s): Department of Philosophy

PHIL*4450 Philosophy Honours Workshop U (3-0) [1.00]
This course trains upper level students in advanced methods of philosophical analysis. Through a workshop format, students will hone their creative and critical skills. Students will learn to analyze and make use of such methods as phenomenology and dialectics, hermeneutics and deconstruction, analytic philosophy and the use of formal logic in conceptual analysis, as well as other methods (including classical methods in philosophy). Editing and peer-reviewing skills will also be developed. Student projects include long and short written assignments, and various formats of oral presentation. This course is especially recommended for students planning to pursue graduate studies in Philosophy.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Restriction(s): 75% average in all Philosophy course attempts.
Department(s): Department of Philosophy

PHIL*4470 Directed Reading F,W (3-0) [0.50]
This course is intended as an intensive course of reading chosen by the student in consultation with the faculty member.
Prerequisite(s): 1.00 credits in Philosophy at the 3000-level
Restriction(s): Instructor consent required.
Department(s): Department of Philosophy

PHIL*4470 Directed Reading F,W (3-0) [0.50]
This course is intended as an intensive course of reading chosen by the student in consultation with the faculty member.
Prerequisite(s): 1.00 credits in Philosophy at the 3000-level
Restriction(s): Instructor consent required.
Department(s): Department of Philosophy

PHIL*4800 Honours Philosophy Research Paper I U (3-0) [0.50]
The preparation of a major research paper under the supervision of a faculty member. Normally open only to 7th semester honours philosophy students.
Prerequisite(s): 1.00 credits in Philosophy at the 3000 level
Restriction(s): Instructor consent required.
Department(s): Department of Philosophy
XII. Course Descriptions, Physics

Physics

Department of Physics

PHYS*1010 Introductory Electricity and Magnetism W (3-3) [0.50]
This is a course for physical science students on the phenomena of electromagnetism, waves and introductory quantum physics. Topics include electric charges and fields, electric potential, capacitance, magnetic fields, electric circuits, waves, electromagnetic waves, quantization of light and other aspects of introductory quantum physics.
Prerequisite(s): (1 of IPS*1500, MATH*1080, MATH*1200), (1 of 4U Physics, Grade 12 Physics, PHYS*1020)
Restriction(s): PHYS*1510
Department(s): Department of Physics

PHYS*1020 Introductory Physics F,W (3-3) [0.50]
This course stresses the fundamental properties of particles and waves, designed for students without 4U Physics or equivalent. Topics include: the motion of particles, force, field, momentum, energy and associated conservation laws; basic interactions between particles; properties of waves. It is expected that students will have completed Grade 11 or 3U Physics and at least 1 4U mathematics credit. This course is intended only for students who require the equivalent of 4U Physics in order to proceed to IPS*1500, IPS*1510, PHYS*1000, PHYS*1010, PHYS*1070, PHYS*1080, PHYS*1130, PHYS*2040. Students may not take this course for credit if they have passed 4U or OAC Physics (or equivalent).
Offering(s): Also offered through Distance Education format.
Department(s): Department of Physics

PHYS*1070 Physics for Life Sciences II W (3-3) [0.50]
This course discusses physics of matter and energy at the macroscopic and microscopic levels, with special emphasis on topics of importance to the biological sciences. Topics include properties of waves, acoustics and hearing, optical systems and vision, quantum nature of radiation and its interaction with biomolecules, electricity, high energy radiation and radioactivity.
Prerequisite(s): (1 of 4U Physics, OAC Physics, PHYS*1020), one 4U or OAC Mathematics course
Restriction(s): IPS*1510, PHYS*1130 PHYS*1300
Department(s): Department of Physics

PHYS*1080 Physics for Life Sciences F,W (3-3) [0.50]
This course discusses aspects of classical physics with particular emphasis on topics of importance in the biological and environmental sciences. Topics include mechanics and applications to anatomical problems, fluid statics and dynamics, molecular motion, diffusion, osmosis, and heat.
Prerequisite(s): (1 of 4U Physics, Grade 12 Physics, PHYS*1020, PHYS*1300), one 4U or Grade 12 Mathematics course
Restriction(s): IPS*1500, PHYS*1000
Department(s): Department of Physics

PHYS*1130 Physics with Applications W (3-3) [0.50]
This course is for engineering and environmental science students, and uses some calculus in analytic problem-solving. Topics include simple harmonic motion, waves, acoustics, optics, properties and absorption of electromagnetic radiation, blackbody radiation, solar spectrum and flux, electric field and potential, DC circuits, power transmission, nuclear processes, and radioactivity.
Prerequisite(s): (1 of IPS*1500, MATH*1080, MATH*1200), (1 of 4U Physics, Grade 12 Physics, PHYS*1020)
Restriction(s): IPS*1510, PHYS*1070
Department(s): Department of Physics

PHYS*1300 Fundamentals of Physics F (3-3) [0.50]
This course introduces students to fundamental phenomena in physics, with particular emphasis on applications to the biological sciences. Topics include: analyzing one-dimensional and two-dimensional motion; Newton’s laws; momentum, energy and associated conservation laws; interactions between charged, resistive direct-current circuits; the fundamentals of waves, with applications to acoustics; ionizing radiation, radioactivity and medical applications. This course is designed for students who have not completed 4U Physics (or equivalent): students with credit in 4U Physics (or equivalent) may not take this course for credit.
Restriction(s): SPI 4U (or equivalent) PHYS*1020 PHYS*1070
Department(s): Department of Physics

PHYS*1600 Contemporary Astronomy F (3-0) [0.50]
This course is designed for non-science students. Emphasis will be on the interdisciplinary and contemporary aspects of astronomy with the object of providing a perspective of our place in the physical universe. Topics will include the solar system, stars and stellar evolution, pulsars, black holes, quasars and cosmology. Students are encouraged to suggest and participate in discussion on items of special interest.
Offering(s): Offered through Distance Education format only.
Restriction(s): Students with standing in any other 1000 level course credit in physics (except PHYS*1020, PHYS*1810) may not use this course for credit. B.Sc. students may not take this course for credit.
Department(s): Department of Physics

PHYS*1810 Physics of Music F (3-0) [0.50]
This course is designed for arts and social science students with an interest or background in music. The fundamentals of vibrations and waves will be introduced and applied to a study of archetypal instruments. The psychoacoustic basis of pitch and loudness will be discussed. Students who have standing in any 1000 level physics course, except PHYS*1020 or PHYS*1600, may enrol in this course only if they are completing an honours or general B.A. program in Music. In this case, permission of the instructor is required. (Also listed as MUSC*1090.)
Offering(s): Offered in even-numbered years.
Equate(s): MUSC*1090
Department(s): Department of Physics

PHYS*2030 Biophysics of Excitable Cells W (3-1) [0.50]
An intermediate biophysics course with special emphasis on the physical properties of nerve cells and of biological transducers such as the ear and the eye.
Prerequisite(s): 1.00 credits in physics (excluding PHYS*1020, PHYS*1600, PHYS*1810)
Department(s): Department of Physics

PHYS*2180 Experimental Techniques in Physics W (1-3) [0.50]
This course is designed to aid students in the development of core practical skills in physics. Students will be required to conduct a series of experiments exploring fundamental concepts in mechanics, electricity & magnetism, thermal physics, as well as the experimental basis of quantum physics. There will be a strong emphasis on data and error analysis with a variety of software applications.
Prerequisite(s): PHYS*2330
Department(s): Department of Physics

PHYS*2240 Thermal Physics F (3-0) [0.50]
This course will introduce students to the basic ideas of thermal physics, including temperature, heat, work, thermal and diffusive equilibrium, and the Boltzmann distribution. The statistical basis for entropy and for thermodynamics will be discussed. Applications of thermodynamics to both non-interacting and interacting systems will be presented.
Prerequisite(s): (1 of IPS*1510, MATH*1210, MATH*2080), (IPS*1500 or PHYS*1080)
Restriction(s): CHEM*2820
Department(s): Department of Physics

PHYS*2310 Mechanics W (4-0) [0.50]
This course continues the building in mechanics begun in the first year. Topics include, one, two and three dimensional motion, damped and forced harmonic oscillator, gravitation and orbital motion, special relativity, noninertial reference frames, and rigid body dynamics.
Prerequisite(s): MATH*2270, (1 of IPS*1500, PHYS*1000, PHYS*1080)
Restriction(s): PHYS*2440
Department(s): Department of Physics

PHYS*2330 Electricity and Magnetism I F (4-0) [0.50]
This course continues the building in electricity and magnetism begun in the first year and is intended for students proceeding to advanced studies in the physical sciences. Topics include vector calculus, electric fields, potential, electric work and energy, Gauss’s Law, Poisson’s and Laplace’s equations, conductors, D.C. circuits, transients and dielectric materials.
Prerequisite(s): IPS*1510 or [(MATH*1210 or MATH*2080), (1 of PHYS*1010, PHYS*1070, PHYS*1130)]
Restriction(s): PHYS*2460
Department(s): Department of Physics

Last Revision: March 4, 2016
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Department(s)</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Offering(s)</th>
</tr>
</thead>
</table>
| PHYS*2340           | Electricity and Magnetism II W (4-0) [0.50]               | Department of Physics          | This course is a continuation of PHYS*2330. Topics include magnetic forces and fields, the Biot-Savart equation, Ampere's Law, magnetic induction, LRC transients, A.C. circuits and magnetic materials.  
Prerequisite(s): PHYS*2330  
Restriction(s): PHYS*2470  
Department(s): Department of Physics |                                                                        | Offered through Distance Education format only. |
| PHYS*2600           | General Astronomy F (4-1) [0.50]                           | Department of Physics          | An introduction to astronomy, this course covers the solar system, the sun, stellar and galactic structure.  
Offering(s): Offered through Distance Education format only  
Prerequisite(s): 0.50 credits in physics at the 1000 level (excluding PHYS*1600, PHYS*1810), 0.50 credit in mathematics at the 1000 level  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3000           | Optics: Fundamentals and Applications W (3-0) [0.50]      | Department of Physics          | This course will introduce students to the fundamental principles of wave and geometric optics, with an emphasis on applications. Topics will include reflection, refraction, diffraction, interference, and polarization, as well as fibre optics, imaging systems and lasers.  
Prerequisite(s): PHYS*2340, PHYS*3130  
Restriction(s): PHYS*3220  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3080           | Energy W (3-0) [0.50]                                     | Department of Physics          | This course covers energy resources and the production, transmission, interconversion, consumption and waste of energy in the industrial society. Emphasis is placed on environmental impact and human safety. Topics include fossil fuels, nuclear fission and fusion, wind and solar power, the hydrogen economy, and conservation strategies.  
Offering(s): Offered through Distance Education format only.  
Prerequisite(s): IPS*1500 or ([PHYS*1000 or PHYS*1080], (1 of MATH*1000, MATH*1080, MATH*1200), (1 of IPS*1510, PHYS*1010, PHYS*1070, PHYS*1130)  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3130           | Mathematical Physics F (3-0) [0.50]                       | Department of Physics          | This course covers a number of mathematical techniques that are required in all areas of physics. Curvilinear coordinates, special functions, Fourier series and integral transforms, Green’s functions, and a number of advanced topics will be discussed. The course emphasizes the application of these techniques to solve a variety of physics problems, providing context to the fundamental tools of the discipline.  
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), MATH*2200, MATH*2270, PHYS*2310, PHYS*2340  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3170           | Radioactivity and Radiation Interactions F (3-0) [0.50]   | Department of Physics          | This course will provide a fundamental understanding of radiation physics and dosimetry, as well as assist students in the development of their problem solving skills in this field. Topics will include: atomic and nuclear structure, radioactivity, interaction of radiation with matter, radiobiology, radiation dosimetry, and external radiation protection.  
Throughout the course, applications of radiation physics in medicine will be highlighted.  
Prerequisite(s): (1 of IPS*1510, MATH*1210, MATH*2080), ( MATH*2170 or MATH*2270)  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3230           | Quantum Mechanics I F (4-0) [0.50]                        | Department of Physics          | This course consists of a formal treatment of quantum mechanics. Topics include wave packets and free particle motion, the Schrodinger equation, harmonic oscillator, piecewise constant potentials, central forces and angular momentum, and the hydrogen atom.  
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), ( MATH*2170 or MATH*2270), (PHYS*2340 or PHYS*2470)  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3400           | Advanced Mechanics F (3-0) [0.50]                         | Department of Physics          | This course covers Lagrangian mechanics and Hamiltonian mechanics. Topics include least action principles, Poisson brackets, Liouville's theorem, Hamilton-Jacobi theory, the transition to quantum mechanics and introduction to non-linear dynamics.  
Prerequisite(s): ( MATH*2170 or MATH*2270), (PHYS*2310 or PHYS*2440)  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*3510           | Intermediate Laboratory W (0-6) [0.50]                    | Department of Physics          | This modular course consists of experiments in modern and classical physics. Modules include laboratory instrumentation employing computers, modern physics, waves and optics, molecular physics, biophysics, and solid state physics.  
Prerequisite(s): PHYS*2180 or (NANO*2100, PHYS*2310)  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4001 Research  | Physics F (0-6) [0.50]                                    | Department of Physics          | This course is the first part of the two-semester course PHYS*4001/2. Refer to PHYS*4001F for the course description.  
Prerequisite(s): PHYS*3510  
Restriction(s): PHYS*4510. Instructor consent required.  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4002 Research  | Physics W (0-6) [0.50]                                    | Department of Physics          | This course is the second part of the two-semester course PHYS*4001/2. Refer to PHYS*4001F for the course description.  
Prerequisite(s): PHYS*4001  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4040 Quantum   | Mechanics II W (4-0) [0.50]                              | Department of Physics          | This is a second course in quantum mechanics. Topics include spin and two-level systems, quantum systems of multiple particles, quantum description of fermions and bosons, time independent perturbation theory, and the fine structure of hydrogen.  
Prerequisite(s): PHYS*3230  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4070           | Clinical Applications of Physics in Medicine W (3-0) [0.50]| Department of Physics          | This course provides an overview of the application of physics to medicine. The physical concepts underlying the diagnosis and treatment of disease will be explored. Topics will include general imaging principles such as resolution, intensity, and contrast; x-ray imaging and computed tomography; radioisotopes and nuclear medicine, SPECT and PET; magnetic resonance imaging; ultrasound imaging and radiation therapy.  
Prerequisite(s): PHYS*3170  
Restriction(s): PHYS*4560  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4120 Atomic and| Molecular Physics F (3-0) [0.50]                          | Department of Physics          | The application of quantum theory to atomic and molecular structure, and the interaction between electromagnetic radiation and atoms and simple molecules.  
Prerequisite(s): PHYS*4040  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4130           | Subatomic Physics W (3-0) [0.50]                          | Department of Physics          | This course surveys the field of subatomic physics from radioactive emissions to conjectured subunits of nucleons. Topics include quark models; strong, electromagnetic and weak interactions; isospin, strangeness, conservation laws and symmetry principles; systematics of nuclear properties, nuclear radioactivity, nuclear models and reactions.  
Prerequisite(s): PHYS*4040  
Department(s): Department of Physics |                                                                        |                                                                            |
| PHYS*4150 Solid State| Physics W (3-0) [0.50]                                    | Department of Physics          | The topics covered in this course include: bonding in solids, thermal and electrical properties of solids, energy bands, imperfections in solids, properties of semiconductors and insulators.  
Prerequisite(s): PHYS*4040, PHYS*4240  
Department(s): Department of Physics |                                                                        |                                                                            |
PHYS*4180 Advanced Electromagnetic Theory F (3-0) [0.50]
This course covers Maxwell's equation, Lorentz-force law, conservation of charge, and conservation of energy (Poynting's theorem). In addition, the course will discuss potentials, gauge transformations, wave equations, and multipole expansions as well as Green's functions for the wave and Poisson equations. Additional topics include electrostatics and magnetostatics (including boundary-value problems), motion of charged particles in electromagnetic fields, and propagation and generation of electromagnetic waves.
Prerequisite(s): (PHYS*2340 or PHYS*2470)
Department(s): Department of Physics

PHYS*4240 Statistical Physics II F (3-0) [0.50]
A continuation of PHYS*2240 including a discussion of the grand canonical distribution, quantum statistics, and transport theory.
Prerequisite(s): (PHYS*2240 or PHYS*3240), PHYS*3230
Department(s): Department of Physics

PHYS*4300 Inquiry in Physics W (0-6) [0.50]
In this course, students will undertake independent study of the scientific literature and learn how to communicate scientific research effectively. Students will prepare seminars and written reports on approved topics drawn from current research initiatives in physics.
Prerequisite(s): 2.00 PHYS credits at the 2000 level or higher.
Department(s): Department of Physics

PHYS*4500 Advanced Physics Laboratory F,W (0-6) [0.50]
This is a modular course for students in any physics-related major in which techniques of nuclear, solid state and molecular physics will be studied.
Prerequisite(s): PHYS*3510
Department(s): Department of Physics

PHYS*4540 Molecular Biophysics W (3-0) [0.50]
Physical methods of determining macromolecular structure: energetics, intramolecular and intermolecular forces, with applications to lamellar structures, information storage, DNA and RNA, recognition and rejection of foreign molecules.
Prerequisite(s): 0.50 credits in biochemistry, (CHEM*3860 or PHYS*3230)
Department(s): Department of Physics

PHYS*4910 Advanced Topics in Physics I U (3-0) [0.50]
The content of this course is determined by the interests of the students. Possible topics include fluid mechanics, theory of elastic solids, general relativity, astrophysics, and chaos. This course is not offered every year.
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), (MATH*2170 or MATH*2270), ([ PHYS*2450, PHYS*2470] or [PHYS*2180, PHYS*2310, PHYS*2340])
Department(s): Department of Physics

PHYS*4920 Advanced Topics in Physics II U (3-0) [0.50]
The content of this course is determined by the interests of the students. Possible topics include fluid mechanics, theory of elastic solids, general relativity, astrophysics, and chaos. This course is not offered every year.
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), (MATH*2170 or MATH*2270), ([ PHYS*2450, PHYS*2470] or [PHYS*2180, PHYS*2310, PHYS*2340])
Department(s): Department of Physics

PHYS*4930 Advanced Topics in Physics III U (3-0) [0.50]
The content of this course is determined by the interests of the students. Possible topics include fluid mechanics, theory of elastic solids, general relativity, astrophysics, and chaos. This course is not offered every year.
Prerequisite(s): (1 of MATH*1160, MATH*2150, MATH*2160), (MATH*2170 or MATH*2270), ([ PHYS*2450, PHYS*2470] or [PHYS*2180, PHYS*2310, PHYS*2340])
Department(s): Department of Physics
**Physiology**

*Department of Biomedical Sciences*

For course listings and descriptions see Biomedical Sciences.

Additional course listings may be found in the course descriptions for Veterinary Medicine and Human Kinetics.

Students wishing to study Physiology can complete a 3000 level course or course sequence in: ZOO*3200 ; or ZOO*3210 ; or HK*3940 ; or BIOM*3100 ; and either BIOM*3110 or BIOM*3120 . In addition, students can select specialized courses at the 4000 level (preferably at least 2 with labs) offered by the:

**Department of Biomedical Sciences:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOM*4020</td>
<td>[0.50]</td>
<td>Physiology of Digestion</td>
</tr>
<tr>
<td>BIOM*4030</td>
<td>[0.50]</td>
<td>Endocrine Physiology</td>
</tr>
<tr>
<td>BIOM*4041/2</td>
<td>[1.00]</td>
<td>Mammalian Reproductive Biology</td>
</tr>
<tr>
<td>BIOM*4050</td>
<td>[0.50]</td>
<td>Biomedical Aspects of Aging</td>
</tr>
</tbody>
</table>

**School of Human Biology:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK*4320</td>
<td>[0.50]</td>
<td>Work Physiology</td>
</tr>
<tr>
<td>HK*4460</td>
<td>[0.50]</td>
<td>Regulation of Human Metabolism</td>
</tr>
<tr>
<td>HK*4530</td>
<td>[0.50]</td>
<td>Human Cardiovascular Physiology</td>
</tr>
</tbody>
</table>

**Department of Integrative Biology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZOO*4170</td>
<td>[0.50]</td>
<td>Experimental Comparative Animal Physiology</td>
</tr>
<tr>
<td>ZOO*4390</td>
<td>[0.50]</td>
<td>Environmental Physiology</td>
</tr>
<tr>
<td>ZOO*4470</td>
<td>[0.50]</td>
<td>Comparative Endocrinology</td>
</tr>
</tbody>
</table>
### PBIO*3110 Crop Physiology F (3-3) [0.50]
This course examines the physiological basis of crop yield determination, with emphasis on phenomena that express themselves at the whole canopy (rather than single plant) level of organization. It covers canopy scale measurements of crop growth, development, and solar radiation capture; photosynthesis, beginning at the level of biochemistry and working up to the whole canopy scale; how photoassimilates are used in the processes of respiration, growth and yield formation; and crop-environment interactions, including water stress, nutrient uptake and utilization, and light quality effects on photomorphogenesis.

*Prerequisite(s):* 1 of BIOL*1050, BIOL*1070, BIOL*1090

*Department(s):* Department of Plant Agriculture

### PBIO*3750 Plant Tissue Culture F (2-3) [0.50]
This course examines and discusses the principles, protocols and utilization of plant cell tissue culture systems. In vitro propagation and regeneration, mutagenesis and selection, secondary metabolite elicitation and cell transformation techniques including protoplast fusion, direct DNA uptake and plant bacterial co-cultivation will be emphasized.

*Prerequisite(s):* AGR*2470 or BOT*2100

*Department(s):* Department of Plant Agriculture

### PBIO*4000 Molecular and Cellular Aspects of Plant-Microbe Interactions F (3-0) [0.50]
This course examines molecular and cellular aspects of the interaction between plants and microorganisms such as mycorrhizae, pathogenic fungi, Agrobacterium, pathogenic bacteria, and plant viruses. Topics include microbial virulence, signaling, gene expression, and disease resistance in plants.

*Prerequisite(s):* 1 of BOT*2100, MICR*2030, (BIOL*1070, BIOL*1090, MBG*2040)

*Department(s):* School of Environmental Sciences

### PBIO*4070 Biological and Cultural Control of Plant Diseases W (3-0) [0.50]
This course explores current concepts and approaches to managing plant pathogens and diseases in crops and natural plant communities by measures that have minimal impact on the environment. Topics include naturally-occurring biological control such as suppressive soils and induced host resistance, use of microbial agents and their modes of action, transgenic disease resistance, use of organic soil amendments and mulches to promote microbial diversity and suppress pathogens, and effects of sanitation, crop sequences, tillage, flooding, soil solarization and other cultural practices on microbial communities, including pathogens and on disease epidemics.

*Prerequisite(s):* 1 of ENVB*3210, ENVS*3210, MICR*3090, MICR*3220

*Equate(s):* ENVB*4070

*Department(s):* Department of Plant Agriculture

### PBIO*4150 Molecular and Cellular Aspects of Plant Development W (3-0) [0.50]
This course examines the molecular and cellular processes that underlie cellular differentiation and organ formation in plants. The roles of homeotic genes, gene regulation, cell polarity, morphogens and environmental effects in development will be discussed. Subjects will be introduced by a lecture and examined in detail in discussions of pertinent research papers.

*Offering(s):* Offered in even-numbered years.

*Prerequisite(s):* (AGR*2470 or BOT*2100), (MBG*2040 or MBG*2400)

*Department(s):* Department of Plant Agriculture

### PBIO*4530 Plants and Environmental Pollution W (3-0) [0.50]
This course analyzes the environmental pollution effects on physiological and ecological processes of plants, in both managed and unmanaged ecosystems. Pollutants under study include contaminants of air (such as ozone, sulphur dioxide, NO x ) and soil (such as metals). This course also covers how to use plants to improve air (both indoor and outdoor), water and soil environment. The format includes both lecture and presentation/discussion of current and historical peer-reviewed literature.

*Prerequisite(s):* 1 of BIOL*2060, BOT*2100, ENVM*1200, ENVS*2040, ENVS*2330, PBIO*3110 , CHEM*1040

*Department(s):* School of Environmental Sciences

### PBIO*4750 Genetic Engineering of Plants W (3-3) [0.50]
This course provides an examination and discussion of the principles, protocols and applications of molecular biology and transformation technology to the genetic improvements of plants.

*Prerequisite(s):* (AGR*2470 or BOT*2100), (MBG*2040 or MBG*2400)

*Department(s):* Department of Plant Agriculture
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Term</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS*1000</td>
<td>Understanding Politics</td>
<td>F,W</td>
<td>3-1</td>
</tr>
<tr>
<td>POLS*1300</td>
<td>Understanding Politics</td>
<td>F,W</td>
<td>3-1</td>
</tr>
<tr>
<td>POLS*1150</td>
<td>Understanding Politics</td>
<td>F,W</td>
<td>3-1</td>
</tr>
<tr>
<td>POLS*1400</td>
<td>Issues in Canadian Politics</td>
<td>F</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2080</td>
<td>Development and Underdevelopment</td>
<td>F</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2100</td>
<td>Comparative Politics</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2200</td>
<td>Comparative Politics</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2300</td>
<td>Comparative Politics</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2350</td>
<td>Comparative Politics</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3130</td>
<td>Law, Politics and Judicial Process</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3140</td>
<td>Politics and the Charter of Rights</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3150</td>
<td>Law, Politics and Judicial Process</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3160</td>
<td>Law, Politics and Judicial Process</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3300</td>
<td>Politics of Africa</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3400</td>
<td>Politics of the Middle East and North Africa</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3500</td>
<td>Politics of Latin America</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2250</td>
<td>Public Administration and Governance</td>
<td>W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2300</td>
<td>Canadian Government and Politics</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*2350</td>
<td>Law from a Political Science Perspective</td>
<td>F,W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3000</td>
<td>Politics of Africa</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3050</td>
<td>Canadian Political Parties, Elections and Pressure Groups</td>
<td>W</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3060</td>
<td>Politics of the Middle East and North Africa</td>
<td>U</td>
<td>3-0</td>
</tr>
<tr>
<td>POLS*3080</td>
<td>Politics of Latin America</td>
<td>U</td>
<td>3-0</td>
</tr>
</tbody>
</table>

**Political Science**

Department of Political Science

For courses without semester designations, please check with the department. Advance schedules are available in the department.

The department works in cooperation with the department of Political Science at the University of Waterloo to offer courses via the video link classroom. These courses are identified by the designation LINK in their course description. Further information can be obtained from the department.

**POLS*1150 Understanding Politics F,W (3-1) [0.50]**

This is the recommended introductory course for students intending to pursue a specialization in Political Science. An introduction to the basic concepts of politics, such as liberty, equality, social justice, constitutionalism, sovereignty, federalism, parliamentary versus presidential government. The course will emphasize the meaning and use of these terms within Canada in the context of other political systems.

**Restriction(s):** POLS*1000, POLS*1300

**Department(s):** Department of Political Science

**POLS*1400 Issues in Canadian Politics F (3-0) [0.50]**

Through the lens of contemporary political issues, this course will examine the pillars of the Canadian political system - Parliamentary government, federalism and the Charter of Rights and Freedoms - and how they reflect and affect the distinctly Canadian societal cleavages: linguistic, regional, ethnic, national, and sexual. Students will develop an awareness and understanding of these concepts, institutions and processes, which will enhance their ability to interpret current political events and provide a foundation upon which to explore Canadian politics, identity, public policy and governance in upper level political science courses.

**Offering(s):** Also offered through Distance Education format.

**Department(s):** Department of Political Science

**POLS*2080 Development and Underdevelopment F (3-0) [0.50]**

An examination of the politics of development, distribution and conflict in Africa, Asia, the Middle East and the Americas from a comparative and international perspective.

**Department(s):** Department of Political Science

**POLS*2100 Comparative Politics W (3-0) [0.50]**

An examination of the evolution, purposes, structures and functions of the state in relation to the economy and civil society.

**Department(s):** Department of Political Science

**POLS*2150 Gender and Politics W (3-0) [0.50]**

This course introduces students to competing approaches to gender and politics. Students will examine the interrelationship of gender, politics and the state, focusing on its implications for political mobilization, representation and participation, public policy, global gender issues in international relations, and cultural and regional differences in gender politics. The course provides the student with the conceptual and analytical tools for upper-year courses on politics in general and on gender, sexuality and politics in particular.

**Department(s):** Department of Political Science

**POLS*2200 International Relations F (3-0) [0.50]**

An introduction to basic theories and concepts in the study of international relations, including an analysis of power, national interest, security, survival, nationalism, sovereignty, decision-making, interdependence, integration, and transnationalism.

**Department(s):** Department of Political Science

**POLS*2250 Public Administration and Governance W (3-0) [0.50]**

This course explores, from both practical and theoretical perspectives, planning and implementation of programs and services through government departments and agencies and "alternative" processes and structures, sometimes involving non-governmental actors.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** POLS*1150 or POLS*1400

**Department(s):** Department of Political Science

**POLS*2300 Canadian Government and Politics F,W (3-0) [0.50]**

This course explores the core institutions of Canadian government, including parliamentary government, federalism, the Charter of Rights and Freedoms and electoral systems. How these institutions shape and are shaped by political parties and social forces, as well as current issues like Quebec nationalism, identity politics and Aboriginal governance, are covered.

**Offering(s):** Also offered through Distance Education format.

**Department(s):** Department of Political Science

**POLS*2350 Law from a Political Science Perspective F,W (3-0) [0.50]**

This course will consider law as both the output of political action and as the structure in which political action occurs. It will introduce students to core legal concepts, explore the impact of law on private and public actors, and help students develop legal research skills.

**Prerequisite(s):** POLS*1150 or POLS*1400

**Department(s):** Department of Political Science

**POLS*3000 Politics of Africa U (3-0) [0.50]**

Africa in the 20th Century has been the scene of rapid political and economic change. This course analyzes African politics in the light of contemporary problems of development and modernization.

**Prerequisite(s):** POLS*2080 or POLS*2100

**Department(s):** Department of Political Science

**POLS*3050 Canadian Political Parties, Elections and Pressure Groups W (3-0) [0.50]**

The course emphasizes political process rather than governmental structures. Topics to be explored include the role of political parties, pressure groups, the electoral system and voting and their impact on the nature of Canada as a democratic state.

**Prerequisite(s):** POLS*1400 or POLS*2300

**Department(s):** Department of Political Science

**POLS*3060 Politics of the Middle East and North Africa U (3-0) [0.50]**

Students will examine the political dynamics of selected states and societies (e.g. Egypt, Syria, Saudi Arabia, Iran, Israel, Jordan and Algeria) in the Middle East and North Africa (MENA). Issues to be covered: the impact of early Middle Eastern/North African history upon today’s politics; class structures in the MENA countries and their impact on politics; the rise of Arab nationalism; Zionism; the politics of oil; the status of women; the political impact of economic restructuring; Islamic movements; state-building; and political liberalization and democratization in the Middle East and North Africa.

**Prerequisite(s):** POLS*2080 or POLS*2100

**Department(s):** Department of Political Science

**POLS*3080 Politics of Latin America U (3-0) [0.50]**

An exploration of Latin American politics from a multidimensional perspective. It analyzes the interaction among contemporary political structures, ideologies and processes in the context of socio-economic change.

**Prerequisite(s):** POLS*2080 or POLS*2100

**Department(s):** Department of Political Science

**POLS*3130 Law, Politics and Judicial Process U (3-0) [0.50]**

This course emphasizes the study of the judicial system as a branch of government and highlights the interaction between the judiciary, law, the political process and public policy. Issues such as judicial selection and Charter of Rights decisions by courts will be explored. Comparisons with the judicial process in other countries will supplement the focus on the Canadian judicial process.

**Prerequisite(s):** 1 of POLS*2350, POLS*2250, POLS*2300

**Department(s):** Department of Political Science

**POLS*3140 Politics and the Charter of Rights W (3-0) [0.50]**

This course examines the legal and political effects of the Canadian Charter of Rights and Freedoms. Issues to be examined may include the Charter’s influence on Canadian political culture and identity, interest groups and social movements, the power of the courts, and public policy. Analysis of specific Charter sections and judicial decisions along with comparisons to other countries will be used to aid the analysis.

**Prerequisite(s):** POLS*2300 or POLS*2350

**Department(s):** Department of Political Science
POL*3160 Women and Politics in the Third World U (3-0) [0.50]

The purpose of this course is twofold: 1) to examine Western analyses and assumptions concerning women and politics in the Third World; and 2) to examine how women’s activities in the Third World challenge our definitions and understanding of power, political participation, and empowerment.

Prerequisite(s): POLS*2080 or POLS*2100
Department(s): Department of Political Science

POL*3180 Research Methods I: Political Inquiry and Methods F (2-1) [0.50]

Students will be introduced to some of the major paradigms of political science research that shape inquiry into political and social phenomena. Students will learn how to: define research problems and construct questions for political inquiry; develop theory to explain, predict or interpret the political world; and formulate research designs. A variety of qualitative and quantitative methods will be explored.

Prerequisite(s): 5.00 credits including (2 of POLS*2080, POLS*2100, POLS*2200, POLS*2250)
Department(s): Department of Political Science

POL*3210 The Constitution and Canadian Federalism W (3-0) [0.50]

Canada’s constitution and its federal system lie at the heart of the ongoing crisis facing the Canadian Confederation. This course examines the major features of our constitutional development, how the current system of intergovernmental relations has evolved, and the challenges posed by Canada’s cultural diversity, pressures for decentralisation, and the maintenance of national sovereignty.

Prerequisite(s): POLS*2300
Department(s): Department of Political Science

POL*3230 Modern Political Thought W (3-0) [0.50]

This course explores the impact of modern science and technology, and its impact on the western tradition of justice from the seventeenth century to the twentieth century. It will explore this theme in writers such as Thomas Hobbes, Jonathan Swift, J-J Rousseau, Edmund Burke, Friedrich Nietzsche and George Grant. The exact selection of thinkers will vary from year to year and students are advised to check the course outline.

Prerequisite(s): POLS*2000 or POLS*3280
Restriction(s): POLS*3021
Department(s): Department of Political Science

POL*3250 Public Policy: Challenges and Prospects F (3-0) [0.50]

This course covers the dominant theories that explain the origins and character of public policy in Canada, and other countries. The focus will be on both governmental and nongovernmental actors.

Prerequisite(s): POLS*1400 or POLS*2250
Department(s): Department of Political Science

POL*3270 Local Government in Ontario U (3-0) [0.50]

Municipal governments are major spenders of public funds in Canada, and are also of government closest to the people. In this course, students will examine the major problems confronting urban government in Ontario.

Prerequisite(s): 7.50 credits
Department(s): Department of Political Science

POL*3300 Governing Criminal Justice U (3-0) [0.50]

The course provides an overview of the policy process and outcomes of the Canadian criminal justice system. Particular emphasis is placed on examining, using various public policy and public management perspectives, the practices and interactions of governmental agencies within the system, such as police agencies and boards, departments of Justice, Solicitor-General, corrections and parole agencies, courts and the legal profession.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of POLS*2350, POLS*2250, POLS*2300
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POL*3320 Politics of Aid & Development F (3-0) [0.50]

This course examines the motivations and mechanisms by which industrialized states have designed and implemented foreign aid programs and policy, primarily since the end of the Second World War. Particular emphasis will be placed on the role of multilateral, bilateral and nongovernmental organizations in the delivery of development assistance and humanitarian relief.

Prerequisite(s): POLS*2080
Department(s): Department of Political Science

POL*3370 Environmental Politics and Governance S,F (3-0) [0.50]

This course examines environmental politics and governance in Canada as well as in comparative and international contexts. This is accomplished by surveying how various political, legal, administrative, and private-public actors and processes influence the development and implementation of environmental policy.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 7.50 credits
Department(s): Department of Political Science

POL*3410 U.S. Politics and Government U (3-0) [0.50]

This course involves a treatment of the basic principles and institutions of national government and politics in the United States as well as the making and execution of public policy at the national and state levels.

Prerequisite(s): POLS*2100 or POLS*2300
Department(s): Department of Political Science

POL*3440 Corruption, Scandal and Political Ethics U (3-0) [0.50]

This course will introduce students to the phenomenon of political corruption and the study of its incidence. Attention will be paid to historical examples, contemporary scandals, and analytical articles, dealing with the nature, causes and effects, and proposed cures of political corruption, and the ethical dilemmas inherent in political life.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 5.00 credits
Department(s): Department of Political Science

POL*3450 European Governments and Politics F (3-0) [0.50]

Europe has forged a new form of political organization, the European Union, in addition to its variety of national democratic forms. This course offers a comparative examination of selected national governments, as well as an exploration of this new supra-national organization.

Prerequisite(s): 4.00 credits including 1 of EURO*1050 , POLS*2100, POLS*2200
Department(s): Department of Political Science

POL*3470 Business-Government Relations in Canada U (3-0) [0.50]

The public and private sectors in Canada have become more and more interrelated in recent years as evidenced by tax and expenditure policies, the role of regulation and public enterprise, and the increasing emphasis on consultation and co-ordination. This course examines the evolving relationship between governments and the private sector in Canada, including business (both large and small), organized labour, specific sectors such as agriculture and consumer affairs and voluntary organizations.

Prerequisite(s): POLS*1400 or POLS*2250
Department(s): Department of Political Science

POL*3490 Conflict and Conflict Resolution F (3-0) [0.50]

This course will examine the growing body of literature which considers violent conflict and its management. Materials are organized to reflect the trajectory of many contemporary conflicts: from explanations for violence, to identifying conditions and means to resolve conflict and, finally, to post-conflict governance.

Prerequisite(s): POLS*1500 or POLS*2200
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POL*3650 Research Methods II: Quantitative Methods W (2-1) [0.50]

This course examines quantitative research methods used in political science, primarily sampling and surveying techniques, in combination with elementary statistical analysis. Students learn how to apply basic descriptive and inferential statistical procedures to research political problems and test hypotheses. In lab, students will acquire the skills to perform data analysis.

Prerequisite(s): POLS*3180 or SOAN*2120
Restriction(s): Registration in Criminal Justice & Public Policy or Political Science (major, minor or area of concentration) or International Development (major only).
Department(s): Department of Political Science

POL*3670 Comparative Public Policy and Administration W (3-0) [0.50]

This course examines the role of the bureaucracy in national development in various economic, social and political environments. The focus of the course is the interplay between bureaucracy, democracy and development in a comparative perspective.

Prerequisite(s): 1 of IDEV*1010, IDEV*2500, POLS*2080, POLS*2100, POLS*2250
Department(s): Department of Political Science
POLS*3710 Politics and Sexuality U (3-0) [0.50]

Sexuality is treated as a subject for political theory from a number of critical and interdisciplinary perspectives. The course examines the relationship between sexuality and politics by analyzing the dynamics of power in the context of sexuality.

Prerequisite(s): POLS*2000 or PHIL*2060

Department(s): Department of Political Science

POLS*3790 The Political Economy of International Relations W (3-0) [0.50]

This course examines major features of the contemporary international political economy, treating major theories and concepts within this approach to international relations (hegemony, globalization, interdependence, world systems theory, etc.) and focusing on the operation of key international institutions and regimes (i.e. communications, trade and transport policy).

Prerequisite(s): 1 of IDEV*2010, IDEV*2500, POLS*2080, POLS*2100, POLS*2200

Department(s): Department of Political Science

POLS*3850 Experiential Learning in Political Science U (3-0) [0.50]

This course allows students to reflect upon their involvement in some form of politically related activity, including simulations, volunteer programs, or internship work with government or non-government organizations. The student must find a faculty member from the Department of Political Science willing to act as a supervisor for the course. See the Political Science website for the learning contract and other requirements that must be completed in advance of registering for this course.

Prerequisite(s): Minimum of 10.00 credits, 2.00 of which must be in Political Science.

Restriction(s): Approval of the experience and evaluation criteria by the Undergraduate Committee of the Department of Political Science. Instructor consent required.

Department(s): Department of Political Science

POLS*3890 Government and Politics of India W (3-0) [0.50]

The course is designed to provide a survey of the history, society, culture, politics, government, bureaucracy and foreign relations of India.

Prerequisite(s): 1 of POLS*2080, POLS*2100, POLS*2200

Department(s): Department of Political Science

POLS*3920 Modern China F (3-0) [0.50]

This course is a detailed study of the political history of modern China and its current politics. The main objective is to assess the extent to which the Chinese Communist Party has fulfilled its mandate, which is to build a sovereign and united China as well as to modernize the country within a socialist framework.

Prerequisite(s): 1 of POLS*2080, POLS*2100, POLS*2200

Department(s): Department of Political Science

POLS*3960 Selected Topics in Political Science S,F,W (3-0) [0.50]

Readings and research in selected areas of the discipline not covered by regular course offerings. Students present a proposal and seek approval from a member of the department in the semester previous to enrolment in this course. The method of course presentation, emphasis, and evaluation are at the discretion of the instructor.

Prerequisite(s): 1.50 credits at the 3000 level in Political Science or equivalent

Restriction(s): Instructor consent required.

Department(s): Department of Political Science

POLS*4030 Contemporary Political Theory U (3-0) [0.50]

This course provides an analysis of selected theories and political issues discussed by prominent 20th-Century thinkers. These contemporary works will be examined as part of the long tradition of political discourse dating back to the classical period.

Prerequisite(s): POLS*2000 and at least 1.00 credits at the 3000 level in the Political Thought stream.

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4050 Advanced Topics in Law and Politics U (3-0) [1.00]

This course explores advanced topics in law and politics depending on the interests of the instructor. Potential topics include investigating the law and politics of social change or analyzing debates about the political power of courts in Canada or in comparative perspectives.

Prerequisite(s): 1.00 credits at the 3000-level in the Law, Policy and Governance stream or the Comparative Politics stream. POLS*3130 recommended.

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4060 Advanced Topics Lecture in Law and Politics F,W (3-0) [0.50]

This advanced lecture course explores topics in law and politics. Specific topics vary depending on the interests of the instructor. Potential topics include the relationship between law and social change, human rights, the relationship between law and power, judicial decision-making, and the relationship between law, class, gender, race, and sexuality.

Prerequisite(s): 1 of POLS*2350, POLS*3130, POLS*3140, POLS*3300

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4070 Courts and Parliament F (3-0) [1.00]

The course critically examines the complex relationship between the judiciary and representative institutions. By comparing the treatment of current political controversies (assisted suicide, prostitution, drug treatment), students will better appreciate the often-subtle exchanges between the two institutions and further enhance their research abilities in regards to both legal and legislative processes.

Prerequisite(s): 1 of POLS*2350, POLS*3130, POLS*3300

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4100 Women, Justice and Public Policy U (3-0) [1.00]

This course will use gender-based analysis in examining a series of justice and public policy issues affecting the lives of women, including equality rights, pay and employment equity, domestic violence, sexual assault, family policy, health care policy, and pornography. How do current policies that developed out of neoliberalism influence the lives of women in different ways than men? How can/should they be changed to recognize the different life experiences of women as distinguished from men? The primary focus of the topics covered in this course will be Canadian, although the experiences in other countries will be covered, particularly as it relates to "best practices," where appropriate.

Prerequisite(s): 2 of POLS*2250, POLS*2300, POLS*3250 and 1.00 credits in the Public Policy, Governance and Law or Canadian Politics.

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4140 Conceptions of Canada W (3-0) [1.00]

This course will explore evolving conceptions of Canadian identity and nationalism through consideration of political culture, institutions and constitutional arrangements. Possible topics include: multiculturalism, Aboriginal identity and community, Quebec nationalism, social citizenship, rights and representation, as well as Canada’s global role and significance.

Prerequisite(s): POLS*2300 and 1.00 credits at the 3000 level in the Canadian Politics stream.

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science

POLS*4150 Advanced Lecture in Conceptions of Canada W (3-0) [0.50]

This advanced lecture course will explore evolving conceptions of Canadian identity and nationalism through a consideration of political culture, institutions, and constitutional arrangements. Possible topics include: multiculturalism, Aboriginal identity and community, Quebec nationalism, social citizenship, rights and representation, as well as Canada’s global role and significance.

Prerequisite(s): POLS*2300, (2 of HIST*3160, POLS*3050, POLS*3210, POLS*3270, POLS*3470)

Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

Department(s): Department of Political Science
POLS*2300 Multi-Level Governance in Canada U (3-0) [1.00]
This course considers the evolving relationship among levels of government in Canada. The growth of cities, the growth of policy responsibilities of provinces, the influence of international organizations, and the development of First Nations government in Canada all challenge the conventional study of federal-provincial relations in Canada. From year to year, this course examines one or several of these contemporary dynamics.
Prerequisite(s): POLS*2300 and 1.00 credits at the 3000 level in the Canadian Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*2400 International Political Economy U (3-0) [1.00]
The course relies on theoretical approaches in IPE to examine relationships between politics and economics across national and regional levels. The evolution of the global political economy and its governance structures is explored, as well as contemporary debates about globalization and state and non-state actors’ responses. Issue-areas may include: money and power, technology, trade, development and the environment.
Prerequisite(s): (1 of POLS*2080, POLS*2100, POLS*2200), and at least 1.00 credits at the 3000 level in the International Relations and Global Studies stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*24250 Topics in Public Management W (3-0) [1.00]
This course will examine various topics related to governance, such as public management reform, public sector leadership, third sector organizations or budgeting and human resources.
Prerequisite(s): POLS*2250 and 1.00 credits at the 3000 level in the Public Policy, Governance and Law stream or the Canadian Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*2460 Topics in Public Policy U (3-0) [1.00]
This course will examine various public policy issues such as social policy or health care policy in a Canadian or comparative context.
Prerequisite(s): (2 of POLS*2250, POLS*2300, POLS*3250), 1.00 credits in the Public Policy, Governance and Law stream or the Canadian Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4160 Multi-Level Governance in Canada U (3-0) [1.00]
This course considers the evolving relationship among levels of government in Canada. The growth of cities, the growth of policy responsibilities of provinces, the influence of international organizations, and the development of First Nations government in Canada all challenge the conventional study of federal-provincial relations in Canada. From year to year, this course examines one or several of these contemporary dynamics.
Prerequisite(s): POLS*2300 and 1.00 credits at the 3000 level in the Canadian Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4200 International Political Economy U (3-0) [1.00]
The course relies on theoretical approaches in IPE to examine relationships between politics and economics across national and regional levels. The evolution of the global political economy and its governance structures is explored, as well as contemporary debates about globalization and state and non-state actors’ responses. Issue-areas may include: money and power, technology, trade, development and the environment.
Prerequisite(s): (1 of POLS*2080, POLS*2100, POLS*2200), and at least 1.00 credits at the 3000 level in the International Relations and Global Studies stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4250 Topics in Public Management W (3-0) [1.00]
This course will examine various topics related to governance, such as public management reform, public sector leadership, third sector organizations or budgeting and human resources.
Prerequisite(s): POLS*2250 and 1.00 credits at the 3000 level in the Public Policy, Governance and Law stream or the Canadian Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4300 Human Rights, Ethics, and Development W (3-0) [1.00]
This course will examine the political and ethical consequences of adopting a human rights framework in national and international contexts by both state and non-state actors. This subject will be explored from a range of historical, theoretical and practical perspectives.
Prerequisite(s): (1 of POLS*2080, POLS*2100, POLS*2200), 1.00 credits at the 3000 level in Political Science.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4310 Advanced Lecture in Women, Justice and Public Policy F/W (3-0) [0.50]
This advanced lecture course will use gender-based analysis in examining a series of justice and public policy issues affecting the lives of women, including equality rights, pay and employment equity, domestic violence, sexual assault, family policy, health care policy and pornography. The primary focus of the topics covered in the course will be Canadian, although the experiences of women in other countries will be covered, particularly as it relates to "best practices" where appropriate.
Prerequisite(s): (2 of POLS*2250, POLS*2300, POLS*2350, POLS*3250), (2 of HIST*3160, POLS*3050, POLS*3130, POLS*3210, POLS*3270, POLS*3300, POLS*3370, POLS*3440, POLS*3470, POLS*3670)
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4320 Advanced Lecture on Human Rights, Ethics and Development F (3-0) [0.50]
This advanced lecture course examines the political and ethical consequences of adopting a human rights framework in national and international contexts by both state and non-state actors. This subject will be explored from a range of historical, theoretical and practical perspectives.
Prerequisite(s): (1 of POLS*2080, POLS*2100, POLS*2200), 1.00 credits at the 3000 level in Political Science.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4340 Nationalism, State-building and Identity U (3-0) [1.00]
The course examines the role of nationalism in contemporary politics. Nationalism as such is understood as a major political force in state-building. Its impact on both global and national politics is assessed in relation to other forms of identity-based politics.
Prerequisite(s): (1 of POLS*2000, POLS*2100, POLS*2200), (1.0 credits at the 3000 level in the Comparative Politics stream or 1.00 credits at the 3000 level in the International Relations and Global Studies stream).
Department(s): Department of Political Science

POLS*4370 Topics in Comparative Politics U (3-0) [1.00]
This course considers theories and problems in comparative politics and government in developing and industrialized countries. The geographical and theoretical focus of the course will reflect the interests of the instructor.
Prerequisite(s): (POLS*2080 or POLS*2100) and 1.00 credits at the 3000 level in the Comparative Politics stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science

POLS*4420 Topics in International Relations U (3-0) [1.00]
This course considers theories and problems in the field of International Relations. The theoretical and/or geographical focus of the course will reflect the interests of the instructor.
Prerequisite(s): POLS*2200 and 1.00 credits at the 3000 level in the International Relations and Global Studies stream.
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Political Science
POL**4730 International Relations of the Middle East \(3-0\) [1.00]
This course is designed as an advanced introduction to the international relations of the Middle East. The course focuses on theories of international relations and their applicability to specific case studies of Middle Eastern politics. The course provides a critical examination of conflicts in the region, and contextualizes these conflicts within both realist and neo-realist theories of international relations. The course also provides a critical examination of the Arab-Israeli crisis, with a focus on peace negotiations. The course is offered as a seminar, with a heavy emphasis on class participation. Students participate in a simulation of an Arab-Israeli peace negotiation.

**Prerequisite(s):** (POL**3000, POL**3060, POL**3080, POL**3160, POL**3200, POL**3410, POL**3440, POL**3450, POL**3490, POL**3670, POL**3790, POL**3890, POL**3920)

**Restriction(s):** POL**4910

**Department(s):** Department of Political Science

POL**4740 Advanced Topics in Rights and Liberties \(F-3-0\) [1.00]
The course explores rights and liberties from various perspectives depending on the interests of the instructor. Potential topics include exploring the political, social, and legal factors and theories that explain the development of rights and liberties; rights and liberties in a comparative and international context; or the philosophical and policy debates surrounding rights and liberties.

**Prerequisite(s):** (POL**3130 or POL**3210) and at least 1.00 credits at the 3000 level in the Public Policy, Governance and Law stream.

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Political Science

POL**4760 Advanced Lecture in Comparative Politics \(W-3-0\) [0.50]
This advanced lecture course examines theories and problems in comparative politics and government in developing and industrialized countries. The geographical and theoretical focus of the course will vary depending on the interests of the instructor.

**Prerequisite(s):** (POL**2080 or POL**2100), (2 of POL**3000, POL**3060, POL**3080, POL**3160, POL**3320, POL**3410, POL**3440, POL**3450, POL**3670, POL**3890, POL**3920)

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Political Science

POL**4770 Advanced Lecture in International Relations \(F-3-0\) [0.50]
This advanced lecture course considers theories and problems in the field of International Relations. The theoretical and/or geographical focus will reflect the interests of the instructor.

**Prerequisite(s):** POL**2200, (2 of POL**3160, POL**3320, POL**3490, POL**3790)

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Political Science

POL**4780 Advanced Lecture in Rights and Liberties \(F,W-3-0\) [0.50]
The course explores rights and liberties from various perspectives depending on the interests of the instructor. Potential topics include exploring the political, social, and legal factors and theories that explain the development of rights and liberties; rights and liberties in a comparative and international context; or the philosophical and policy debates surrounding rights and liberties.

**Prerequisite(s):** POL**3250, (1 of POL**3130, POL**3210, POL**3320, POL**3140)

**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations or semester levels during certain periods. Please see the departmental website for more information.

**Department(s):** Department of Political Science

POL**4900 Special Topics Seminar in Political Science \(S,F,W-3-0\) [1.00]
This seminar-based course explores a current issue in Political Science. Topics will vary from year to year and will reflect the research and teaching interests of the faculty member directing the course. Information on the topic of the current offering can be found on the departmental website.

**Prerequisite(s):** 14.00 credits, including 1.00 credits in Political Science at the 3000 level.

**Department(s):** Department of Political Science

POL**4910 Selected Topics in Political Science II \(S,F,W-3-0\) [0.50]
This course provides for independent reading and research in selected areas of the discipline not covered by regular course offerings. Prior to enrollment in the course, approval must be obtained from a member of the department willing to supervise the research. Students should approach potential supervisors with a proposal for readings and research, which may include reflection and expansion on a subject matter addressed in previous course assignments.

**Prerequisite(s):** 1.50 credits at the 3000 level in Political Science or equivalent

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Political Science

POL**4930 Selected Topics in Political Science \(S,F,W-3-0\) [0.50]
This course provides for independent reading and research in selected areas of the discipline not covered by regular course offerings. Prior to enrollment in the course, approval must be obtained from a member of the department willing to supervise the research. Students should approach potential supervisors with a proposal for readings and research, which may include reflection and expansion on a subject matter addressed in previous course assignments.

**Prerequisite(s):** 1.50 credits at the 3000 level in Political Science or equivalent

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Political Science

POL**4970 Honours Political Science Research I \(S,F,W-3-0\) [0.50]
This is Part I of theHonours Essay. Students complete the necessary reading and research for their Honours Essay under the supervision of a department advisor. A research proposal is expected by the end of the semester. Political science majors who wish to pursue an honours thesis must register in this course in their 7th semester. Student selection of an approved subject area and instructor must be completed in the semester previous to enrolment in this course.

**Prerequisite(s):** 70% average in all POLS courses. Recommendation: Students with less than a 75% average are advised not to take this course.

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Political Science

POL**4980 Honours Political Science Research II \(S,F,W-3-0\) [0.50]
This is Part II of the Honours Essay. Students organize and write their essays under the supervision of their advisor. A research proposal is expected by the end of the semester. Potential topics include exploring the political, social, and legal factors and theories that explain the development of rights and liberties; rights and liberties in a comparative and international context; or the philosophical and policy debates surrounding rights and liberties.

**Prerequisite(s):** POL**4970

**Restriction(s):** Instructor consent required.

**Department(s):** Department of Political Science
### Population Medicine

**POPM*3240 Epidemiology F,W (3-0) [0.50]**

The course examines the basic concepts of health and disease in populations. Methods used in descriptive and analytic epidemiological studies, including the design, analysis and interpretation of results for observational studies and field trials are presented.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** (BIOL*1080 or BIOL*1090), STAT*2040

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please see the Department of Population Medicine website for more information.

**Department(s):** Department of Population Medicine

---

**POPM*4040 Epidemiology of Food-borne Diseases F (3-0) [0.50]**

This course examines the epidemiology and prevention of food-borne infections and intoxications, including those of both microbiological and chemical origin. Drawing on outbreak investigations, surveys, risk assessments, government surveillance systems and basic research, the biological, ecological, socio-economic and public health context of these diseases will be discussed.

**Prerequisite(s):** 1 of FOOD*3230, POPM*3240

**Restriction(s):** FOOD*4210

**Department(s):** Department of Population Medicine

---

**POPM*4230 Animal Health F (3-0) [0.50]**

This course examines the causes and effects of important diseases of food animals in Canada, with a focus on dairy cattle. Elements of physiology, epidemiology, microbiology, nutrition, and production management are integrated into a health management approach emphasizing disease prevention. The course is directed at senior undergraduate students with interest in and knowledge of, food animal production agriculture.

**Prerequisite(s):** ANSC*2340 or ANSC*3080

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods. Please see the Department of Population Medicine website for more information.

**Department(s):** Department of Population Medicine
PORT*1100 Introductory Portuguese (Brazilian Culture) F (3-0) [0.50]
This course provides the basics of spoken and written Portuguese for students with no previous studies in the language. The learning context will be present-day Brazilian culture.
Department(s): School of Languages and Literatures

PORT*1110 Intermediate Portuguese (Brazilian Culture) W (3-0) [0.50]
This course is a continuation of Introductory Portuguese with emphasis on oral work. The learning context will be present-day Brazilian culture.
Prerequisite(s): PORT*1100
Restriction(s): Instructor consent required.
Department(s): School of Languages and Literatures
### PSYC*1000 Introduction to Psychology S,F,W (3-0) [0.50]
This is an introduction to the content and methods of psychology. It will cover the major areas such as neuroscience, sensation and perception, learning, cognition, motivation, human development, personality, psychopathology and its treatment, and social psychology.

**Offering(s):** Also offered through Distance Education format.

**Restriction(s):** PSYC*1100, PSYC*1200

**Department(s):** Department of Psychology

### PSYC*1010 Quantification in Psychology F,W (3-0) [0.50]
This course is an introduction to psychological measurement and to statistical principles in psychological research. The course emphasizes descriptive statistics and introduces concepts and techniques of hypothesis testing.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** PSYC*2040, STAT*2060, STAT*2080, STAT*2090, STAT*2100, STAT*2120 This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2040 Research Statistics F,W (2-2) [0.50]
This course emphasizes inferential tests applied to psychological research, skills of data analysis, as well as the use and interpretation of output from statistical software. Topics covered include the t-test, various forms of analysis of variance, chi-square, bivariate and multiple regression, as well as multivariate data analysis.

**Prerequisite(s):** 1 of PSYC*1010, PSYC*2010 , STAT*2040, PSYC*2360

**Co-requisite(s):** PSYC*22360

**Restriction(s):** PSYC*3320

**Department(s):** Department of Psychology

### PSYC*2310 Introduction to Social Psychology S,F,W (3-0) [0.50]
The content and research methods of social psychology will be explored in lectures and seminars. Content includes social perception, attraction, group dynamics, leadership, conflict and cooperation, attitude change, aggression and conformity. (C)

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Department(s):** Department of Psychology

### PSYC*2330 Principles of Learning F,W (3-0) [0.50]
This course is an introduction to the basic principles and concepts of classical and instrumental conditioning paradigms of learning. (C)

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2360 Introductory Research Methods S,F,W (3-0) [0.50]
The application of scientific method in psychological experiments with laboratory demonstration.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200 , (1 of PSYC*1010, PSYC*2010 , STAT*2040)

**Department(s):** Department of Psychology

### PSYC*2390 Principles of Sensation and Perception F,W (3-0) [0.50]
The course objective is to consider the processes of sensory inputs and perception. Approaches ranging from psychophysiology and cognitive psychology to physiology and anatomy will be used. In considering the psychology of sensation and perception, some of the anatomical and physiological aspects of selected senses will be covered in detail and the roles of experience, organization of inputs, and theories of perception are discussed. Topics to be emphasized will vary with the instructor, but may include ontogenetic development, learning, and modification of inputs and their perception. Students will participate in on-line laboratory demonstrations and experiments. (C)

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2410 Behavioural Neuroscience F,W (3-0) [0.50]
This course is a general introduction to the structure and function of the nervous system. The physiological basis of sensory (input) systems and the motor (output) system are examined as are central physiological bases of processes such as arousal and emotion.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2450 Introduction to Developmental Psychology F,W (3-0) [0.50]
This course is an introduction to and an analysis of the major theories of developmental psychology. Emphasis will be placed on the processes of development in the child including physical growth, perception, cognition, personality and interactions with the social environment. The application of developmental psychology to educational and social issues will be discussed. (C)

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** FRHD*2270. This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2650 Cognitive Psychology F,W (3-0) [0.50]
This course is an introduction to cognitive processes, including topics in the areas of attention, memory, language and reasoning. Students will be exposed to and participate in on-line laboratory demonstrations and experiments. (C)

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*2740 Personality S,F,W (3-0) [0.50]
This course is a review of the theory, assessment procedures and research findings pertinent to major personality constructs. Personality research, methodology and design will also be covered. (C)

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** 1 of PSYC*1000, PSYC*1100 , PSYC*1200

**Restriction(s):** This is a Priority Access Course. Some restrictions may apply during some time periods.

**Department(s):** Department of Psychology

### PSYC*3020 Psychology of Law U (3-0) [0.50]
An examination of psychological methods, findings and theories in the study of law. Topics will include the fallibility of the eyewitness; juror decisional processes; credibility of witnesses and attorneys; socialization into legal systems, police behaviour, etc.

**Offering(s):** Also offered through Distance Education format.

**Prerequisite(s):** PSYC*2310 (also see psychology core statement)

**Department(s):** Department of Psychology
XII. Course Descriptions, Psychology

**PSYC*3030 Neurochemical Basis of Behaviour U (3-0) [0.50]**
This course analyses how drugs act on various neurochemical systems to regulate motivation and behaviour. Topics of discussion may include psychopathology and its treatment.

*Prerequisite(s):* PSYC*2330, (BIOM*3090 or PSYC*2410) (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3070 Psychology in Human Resource Management U (3-0) [0.50]**
This course explores the application of psychological theory and measurement in human resources management. A dual perspective is taken: that of the worker impacted by these practices and that of the manager responsible for implementing them. Specific topics include recruitment, personnel selection, performance management, training, and executive assessment, development, and succession.

*Offering(s):* Also offered through Distance Education format.  
*Prerequisite(s):* PSYC*2310 (also see psychology core statement)  
*Restriction(s):* BUS*3000  
*Department(s):* Department of Psychology

**PSYC*3080 Organizational Psychology F/W (3-0) [0.50]**
This course examines current theories and practices in organizational psychology. Selected topics may include motivation, turnover, absenteeism, leadership, job design, work attitudes, organizational justice, and organizational development and change.

*Offering(s):* Also offered through Distance Education format.  
*Prerequisite(s):* PSYC*2310 (also see psychology core statement)  
*Restriction(s):* BUS*2090  
*Department(s):* Department of Psychology

**PSYC*3100 Evolutionary Psychology U (3-0) [0.50]**
Evolutionary Psychology (EP) offers a Darwinian frame of reference for studying questions about human nature. After reviewing basic material on genetics and natural selection, we will examine and criticize the contribution of EP to the understanding of the various aspects of individual and social behaviour, such as altruism, logic, mate selection, health, morality, aesthetics, and the role of culture.

*Prerequisite(s):* PSYC*2360 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3110 Topics in Health Psychology U (3-0) [0.50]**
This course covers research in health psychology. Possible topics include the interplay of psychosocial factors, behaviour, and physical health; pediatric health psychology; health interventions at the individual, family, group or community levels.

*Prerequisite(s):* PSYC*2310, PSYC*2450 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3250 Psychological Measurement U (3-0) [0.50]**
This course is an introduction to the theory of psychological measurement and measurement procedures presently used in psychology. Coverage will include such topics as reliability, validity, test construction; and the measurement of ability, personality, attitudes, interest and achievement. (H)

*Offering(s):* Also offered through Distance Education format.  
*Prerequisite(s):* PSYC*2040 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3280 Minds, Brains & Machines U (3-0) [0.50]**
This course will introduce the student to basic issues in cognitive science from philosophical and psychological perspectives. Connectionism, Turing Machines, artificial intelligence, and alternative naturalistic models of the mind will be among the topics explored.

*Prerequisite(s):* 1.50 credits in Psychology or 1.50 credits in Philosophy  
*Department(s):* Department of Psychology

**PSYC*3300 The Psychology of Gender U (3-0) [0.50]**
This course will examine the theories and psychological research that deals with the impact of gender upon people's lives and behaviour. Topics will include gender-role socialization and stereotypes; gender-related status and power differentials; and gender differences and dynamics in the physiological, intrapsychic, interpersonal, and socio-cultural domains.

*Prerequisite(s):* (1 of PSYC*1000, PSYC*1100, PSYC*1200) and at least 1.00 credits of the psychology core (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3310 Applied Social Psychology U (3-0) [0.50]**
A number of applied issues will be examined from a social psychological perspective. These may include aggression, prejudice, helping, mental illness, crime and addiction. The format will consist of reading, discussion and research/field projects.

*Prerequisite(s):* PSYC*2310 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3330 Memory U (3-0) [0.50]**
This course is an examination of theoretical and empirical studies of the psychological nature of the acquisition, storage and retrieval of information. Students will be exposed to and participate in on-line laboratory demonstrations and experiments.

*Prerequisite(s):* PSYC*2650 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3340 Psycholinguistics U (3-0) [0.50]**
An introduction to the conceptions of the structure of language as they relate to processes underlying the acquisition, production, perception and understanding of speech, and to empirical studies that bear on these conceptions.

*Prerequisite(s):* LNG*1000 or PSYC*2650 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3350 Cross-Cultural Psychology F (3-0) [0.50]**
This course provides an examination of cultural differences from the perspective of psychology, and of individual and group relations within and between culturally diverse societies. The primary goal of this course is to provide a framework and knowledge base with which to understand the various contexts, processes and outcomes of intercultural contact.

*Prerequisite(s):* 9.50 credits including PSYC*2310  
*Department(s):* Department of Psychology

**PSYC*3370 Experimental Design and Analysis F (3-1) [0.50]**
This course is intended for students planning to complete PSYC*4870 and PSYC*4880 in preparation for graduate studies in Psychology. This course emphasizes (1) the model comparison approach to analysis of variance and (2) effective scientific communication. Issues related to design choice, power, multiple-comparisons and categorical data analysis will be reviewed. Laboratory exercises will include SPSS applications and research projects. (H)

*Prerequisite(s):* PSYC*2360, (1 of PSYC*2040, PSYC*3320 or STAT*2050)  
*Restriction(s):* PSYC*3371/2. A minimum grade point average of 75% in Psychology courses.  
*Department(s):* Department of Psychology

**PSYC*3380 Non-experimental Research Methods W (3-0) [0.50]**
This course is intended for students planning to complete PSYC*4870 and PSYC*4880 in preparation for graduate studies in Psychology. This course addresses issues related to the internal and external validity of quasi-experimental, correlation and other non-experimental research methods, survey sampling and the development and refinement of survey questions. Course work includes SPSS applications, research projects and style of effective scientific communication. (H)

*Prerequisite(s):* PSYC*2360, (1 of PSYC*2040, PSYC*3320 or STAT*2050)  
*Restriction(s):* PSYC*3371/2. A minimum grade point average of 75% in Psychology courses.  
*Department(s):* Department of Psychology

**PSYC*3390 Abnormal Psychology U (3-0) [0.50]**
Current theory and research in the field of abnormal psychology will be examined in terms of various models (biological, behavioral, social and psychodynamic). Selected topics may include: stress and anxiety, affective disorders, schizophrenia, psychophysiological and personality disorders, and mental health.

*Offering(s):* Also offered through Distance Education format.  
*Prerequisite(s):* PSYC*2740 (also see psychology core statement)  
*Department(s):* Department of Psychology

**PSYC*3410 Behavioural Neuroscience II U (3-2) [0.50]**
This course will focus on contemporary research and theory related to such selected topics as physiological correlates of memory, learning, motivation, emotion, stress, sensory and motor functions. Both the central and peripheral components of the nervous system will be examined in relation to the above.

*Prerequisite(s):* BIOL*1090 or PSYC*2410 (also see psychology core statement)  
*Restriction(s):* This is a Priority Access Course. Some restrictions may apply during some time periods.  
*Department(s):* Department of Psychology
PSYC*3440 Cognitive Development U (3-0) [0.50]
An examination of theory and research pertaining to children's intellectual development. Topics include children's learning and the development of perception, memory, thinking and language.
Prerequisite(s): FRHD*2270 or PSYC*2450 (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3450 Social and Personality Development U (3-0) [0.50]
This course is an examination of research, methodological issues and theories concerning personality-social development. Topics may include temperament, imitation, parent-child interaction, and the development of attachments, sex-roles, morality, aggression and pro-social behaviour.
Prerequisite(s): FRHD*2270 or PSYC*2450 (also see psychology core statement)
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods.
Department(s): Department of Psychology

PSYC*3460 Abnormal Development U (3-0) [0.50]
This course will focus on theory, research and aspects of current practice concerning abnormal psychological development in childhood and adolescence.
Prerequisite(s): FRHD*2270 or PSYC*2450 (also see psychology core statement)
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods.
Department(s): Department of Psychology

PSYC*3480 Psychology of Sport U (3-0) [0.50]
This course provides an examination of individual and group behaviour in physical activities and sports. Emphasis will be placed on understanding psychological concepts which are pertinent to sports, e.g., motivation, social and personality development, cognition, leadership and group dynamics.
Prerequisite(s): (PSYC*2310 or PSYC*2740) (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3570 The Psychology of Death and Dying U (3-0) [0.50]
An examination of theory, research, and issues in the psychology of death and dying. Emphasis is upon the cognitive operations used to process information about death and the influence of death constructs in daily life. Topics include the development of death concepts throughout the life-span, death anxiety in society, the needs of the dying person, the psychology of grieving, and unexpected losses such as deaths by suicide or miscarriage.
Offering(s): Offered through Distance Education format only.
Prerequisite(s): 1 of PSYC*2310, PSYC*2740, PSYC*2450, work experience in related fields, Instructor consent (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3660 Contemporary Psychology U (3-0) [0.50]
Some current developments in psychology. Topics will vary with the interests of faculty members assigned to the course and will be announced prior to the course selection period.
Prerequisite(s): Previous study related to the topic area (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3690 Community Mental Health U (3-0) [0.50]
This course is an introduction to the principles and practices of community mental health and community psychology. The course deals with the application of public health concepts to the field of mental health, the epidemiology of mental disorder in the community, the design and evaluation of preventive programs for populations at risk of illness, and the creation of alternatives to institutional treatment of the mentally ill. This course should be of special interest to students who are planning to pursue careers in such human service fields as social work and occupational therapy.
Prerequisite(s): PSYC*2310 (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3720 Psychology of Learning Difficulties and Disabilities W (1-3) [0.50]
Students will develop and report on a systematic remedial project involving an underachieving school-age child.
Prerequisite(s): (PSYC*3440 or PSYC*3460) and 3.00 credits in PSYC courses (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3880 Psychology and Education U (3-0) [0.50]
The application of psychological principles and techniques to the study of the educational process.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of FRHD*2270, PSYC*1000, PSYC*1100 , PSYC*1200 (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3850 Intellectual Disabilities U (3-0) [0.50]
This course covers applied and theoretical aspects of intellectual disabilities, and lays a foundation for work in the area of intellectual disabilities.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): FRHD*2270 or PSYC*2450 (also see psychology core statement)
Department(s): Department of Psychology

PSYC*3900 Psychology Research Internship F,W,S (0-6) [0.50]
This course provides an experiential learning opportunity through the active participation of the student in a faculty member's ongoing research program. It is expected that students will develop a broader appreciation of the relationship between knowledge, theory and research while acquiring basic skills in research methodologies and modes of inquiry. The course will require involvement in both the practice and reporting of research.
Prerequisite(s): (1 of PSYC*1000, PSYC*1100 , PSYC*1200 ), (1 of PSYC*1010, PSYC*2010 , STAT*2040) and at least 1.00 credits at the 2000 level of the psychology core.
Restriction(s): Instructor consent required. The student must consult the supervisory faculty member before selecting or registering for the course.
Department(s): Department of Psychology

PSYC*3910 Psychology Externship F,W,S (0-6) [0.50]
An independent program of study formally integrating the student's academic study with one or more work experiences, to be decided by the student in consultation with the supervisory faculty (normally the department's co-op coordinator) prior to registration in the course. In order to qualify for this course, the student must be employed in a work setting at the time of registration to help ensure that a suitable project is feasible in the context of a work placement or employment. The department is not responsible for obtaining employment. The course project is aimed at making a significant contribution to the work setting. The student must consult with the supervisory faculty before selecting or registering for the course. (Enrolment is limited. Not open to co-op students.)
Prerequisite(s): (1 of PSYC*1000, PSYC*1100 , PSYC*1200 ), (1 of PSYC*1010, PSYC*2010 , STAT*2040) and at least 1.00 credits at the 2000 level of the psychology core) or enrolment in the B.Comm Program, Human Resources Management Major.
Restriction(s): Instructor consent required.
Department(s): Department of Psychology

PSYC*4050 Seminar in Animal Learning F (3-0) [0.50]
Major areas of research in animal learning will be covered in a seminar format. Students will orally present research articles and/or review articles in a selected topic in Animal Learning. The selected topic will vary on the basis of the expertise of the instructor. Students will be expected to develop a research proposal as a significant component of the course. (H)
Prerequisite(s): 14 credits including PSYC*2330, PSYC*2410
Department(s): Department of Psychology

PSYC*4310 Advanced Topics in Social Psychology U (3-0) [0.50]
This is an in-depth examination of specific advances in social psychological research, theory, and/or applications. Specific topics, to be announced prior to course selection, will vary according to the interests of the instructor of the course. (H)
Prerequisite(s): (1 of PSYC*3300, PSYC*3310, PSYC*3350, PSYC*3450) (also see psychology core statement)
Department(s): Department of Psychology

PSYC*4320 Advanced Applied Social Psychology U (3-0) [0.50]
This seminar course deals with topics of an applied social nature. This course may focus on a single or a variety of topics such as: health, forensics, conflict (inter-group and interpersonal), social justice and cultural issues. This course addresses both research and practice issues and covers a variety of theories and methodologies. (H)
Prerequisite(s): 1 of PSYC*3300, PSYC*3310, PSYC*3350, PSYC*3450
Department(s): Department of Psychology
PSYC*4330 Advanced Topics in I/O Psychology U (3-0) [0.50]

Students will examine theoretical and methodological issues in selected topic areas of industrial/organizational psychology. The focal area of the course, or range of industrial/organizational topics covered by the course, will vary depending on instructor. Selected topic areas may include leadership issues, gender issues, human rights issues, recruitment methods and outcomes, functional job analysis and validation methods, job performance criteria and appraisal tools, selection processes and tools, organizational justice, work attitudes, and prejudice and discrimination in the workplace. Specific topic areas will be announced prior to the course selection period. (H)

Prerequisite(s):
- PSYC*3070 or PSYC*3080
Department(s):
- Department of Psychology

PSYC*4370 History of Psychology U (3-0) [0.50]

The historical roots of modern psychology. Students electing to major by completing the Honours Thesis Courses I and II should note that they are expected to also take either PSYC*4900, or this course, prior to, or concurrent with, either PSYC*4870 or PSYC*4880 (see Graduate Advisory Note under Major). (H)

Prerequisite(s):
- 4.00 credits in psychology, with at least 1.00 credits at the 3000 level or above.
Department(s):
- Department of Psychology

PSYC*4440 Contemporary Issues in Child Development U (3-0) [0.50]

This course is primarily designed for students in the Psychology program whose special interests are developmental. Students will examine theoretical and methodological issues in a specific area of developmental psychology. The course will involve detailed evaluation of selected studies and when appropriate, student research projects. (H)

Prerequisite(s):
- PSYC*2360, (PSYC*3440 or PSYC*3450)
Department(s):
- Department of Psychology

PSYC*4460 Seminar in Clinical Psychology F (3-0) [0.50]

This course deals with issues and theories in clinical psychology. It is intended primarily for honours students in psychology who plan to pursue further training in clinical psychology at the graduate level or who plan to work in a setting where knowledge of clinical psychology would be an asset. Topics may include psychological assessment, treatment, and outcome research. Students will acquire an understanding of the scientific and professional roles of clinical psychologists, key concepts and techniques of the major orientations of psychotherapy, and current debates in the field. (H)

Prerequisite(s):
- PSYC*3390 or PSYC*3460
Department(s):
- Department of Psychology

PSYC*4470 Behavioural Neuroscience Seminar U (3-0) [0.50]

Major areas of behavioural neuroscience research will be covered in a seminar format. Students will be expected to develop a research proposal as a significant component of the course, and will prepare for this requirement through oral presentations and discussions of published research and/or review articles in a selected topic in Behavioural Neuroscience. The selected topic will vary on the basis of the expertise of the instructor. (H)

Prerequisite(s):
- 14.00 credits including PSYC*2410
Restriction(s):
- Registration in one of: B.A. Psychology major, B.Sc. Psychology: Brain and Cognition major, or Neuroscience minor.
Department(s):
- Department of Psychology

PSYC*4500 Current Theoretical Issues in Psychology S,F,W (3-0) [0.50]

An independent program of study in topics of current theoretical import in psychology, to be decided by the student in consultation with the supervisory faculty member before the student may select or register for the course. (H)

Prerequisite(s):
- 4.00 credits in psychology, with at least 1.00 credits at the 3000 level or above
Restriction(s):
- Instructor consent required.
Department(s):
- Department of Psychology

PSYC*4510 Current Issues in Psychology S,F,W (0-0) [0.50]

The study of issues of current interests in psychology. Topics will vary with the interests of faculty members assigned to the course and will be announced prior to the course selection period. The course is available either as a senior lecture/seminar course with regularly scheduled class times, or as an independent study course with the topic and schedule decided in advance by the student in conjunction with a supervisory faculty member. (H)

Prerequisite(s):
- 4.00 credits in psychology, with at least 1.00 credits at the 3000 level or above and previous study related to the topic area (also see psychology core statement)
Restriction(s):
- Instructor consent required.
Department(s):
- Department of Psychology

PSYC*4600 Cognitive Neuroscience U (3-0) [0.50]

This course will focus on methods used in contemporary cognitive neuroscience (including but not limited to: PET, functional MRI, EEG, intracranial stimulation and recording) as they aid in the elucidation of neural basis of behaviour. (H)

Prerequisite(s):
- (1 of PSYC*2390, PSYC*2410, PSYC*2650), (also see psychology core statement)
Department(s):
- Department of Psychology

PSYC*4750 Seminar in Motivation and Emotion U (3-0) [0.50]

This course examines the topics of motivation and emotion from various interdisciplinary perspectives, adopting a senior seminar format and problem-centred approach. (H)

Prerequisite(s):
- 15.00 credits
Department(s):
- Department of Psychology

PSYC*4870 Honours Thesis I S,F,W (3-0) [0.50]

Under individual faculty supervision, students plan, develop, and write a research proposal and prepare an extensive review paper on their area of research. Group sessions are held on research ethics, subject protocols and computer data handling techniques. This course will be graded on a Pass/Fail basis. Note that enrolment in this course is limited and academic records are used for student selection. Course registration requires the signature of the Chair or the Associate Chair. This signature is contingent upon the student demonstrating they have obtained a Thesis Supervisor's signature on the department's Thesis Registration Form and have an academic standing appropriate for application to graduate programs (see Graduate Advisory under Major). As well, registration for Honours Thesis I will require that either PSYC*4370 or PSYC*4900 is taken prior to, or concurrent with, either PSYC*4870 or PSYC*4880. (H)

Prerequisite(s):
- PSYC*3370, PSYC*3380
Co-requisite(s):
- PSYC*3370 for students enrolled in the Psychology-COOP major.
Restriction(s):
- A minimum grade point average of 75% in Psychology courses.
Instructor consent required.
Department(s):
- Department of Psychology

PSYC*4880 Honours Thesis II S,F,W (3-10) [1.00]

This course is a continuation of PSYC*4870. Students conduct research and write an undergraduate thesis under the direction of a faculty member. Note that registration in this course will require that either PSYC*4370 or PSYC*4900 is taken prior to, or concurrent with, either PSYC*4870 or PSYC*4880. (H)

Prerequisite(s):
- PSYC*4870
Restriction(s):
- A minimum grade point average of 75% in Psychology courses.
Department(s):
- Department of Psychology

PSYC*4900 Psychology Seminar U (3-0) [0.50]

Student seminars and discussions will be organized around theoretical and substantive issues in the discipline of psychology. A major objective is to assist advanced undergraduate students to achieve a degree of synthesis of materials studied in their previous psychology courses (also see psychology core statement). Students elective to Major by completing the Honours Thesis I and II should note that they are expected to also take either PSYC*4370, or this course, prior to, or concurrent with, either PSYC*4870 or PSYC*4880 (see Graduate Advisory under Major). (H)

Prerequisite(s):
- 14.00 credits (including 4.00 credits in psychology, with at least 1.00 credits at the 3000 level or above)
Restriction(s):
- Registration in a Psychology Major of an Honours program.
Department(s):
- Department of Psychology
Real Estate and Housing

Department of Marketing and Consumer Studies, College of Business and Economics

REAL*1820 Real Estate and Housing F (3-0) [0.50]
This course acquaints students with the theories, practices and principles of real estate and housing. Topics include how real estate assets and markets differ from other assets, government involvement in the housing and real estate sectors, non-market housing in Canada, financing real estate, and development.

Prerequisite(s): COST*1820, MCS*1820
Equate(s): COST*1800
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*2820 Real Estate Finance W (3-0) [0.50]
This course examines the financing of both residential and commercial investment real estate. A mathematical approach is used to examine the impact of various lender and borrower decisions about loan terms (amortization periods, pre-payment options, etc.). The evolution of the Canadian housing finance system is contrasted with that in the United States. New methods of financing real estate other than traditional mortgages are discussed.

Prerequisite(s): 5.00 credits
Equate(s): COST*2820, MCS*2820
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*2820 Service Learning in Housing F (3-0) [0.50]
This course provides an introduction to ethics and social capital as they apply to the housing and real estate industries. Students will be required to participate in a 10-15 hour service learning exercise where they volunteer for a frontline housing agency/provider. They will then share their experiences with their classmates during the final week of classes.

Prerequisite(s): 4.00 credits
Equate(s): COST*2850, MCS*2850
Restriction(s): MCS*2810. This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*3810 Real Estate Market Analysis F (3-0) [0.50]
In this course students examine the processes used to analyze supply and demand in the real estate market. The course focuses on using research methodologies to define the scope of analysis; identify data needs; collect information from various sources, including on-line resources; and interpret the results. Applications to different property types are discussed. Current market trends are also examined. As well, the course deals with marketing real estate: listing procedures, advertising, negotiating.

Prerequisite(s): (COST*1820 or REAL*1820), (ECON*2740 or STAT*2060)
Equate(s): MCS*1820 or REAL*1820)
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*3870 Topics in Housing U (3-0) [0.50]
Lecture-discussion or seminar on a selected topic or area of specialization related to housing to be conducted by faculty with special interests or expertise in the area. Students should confirm with the department prior to course selection what topic(s), if any, will be offered during specific semesters.

Prerequisite(s): Will be indicated by the department when the course is offered.
Equate(s): COST*3870, MCS*3870
Restriction(s): Instructor consent required.

Department(s): Department of Marketing and Consumer Studies

REAL*3880 Topics in Housing U (3-0) [0.50]
Lecture-discussion or seminar on a selected topic or area of specialization related to housing to be conducted by faculty with special interests or expertise in the area. Students should confirm with the department prior to course selection what topic(s), if any, will be offered during specific semesters.

Prerequisite(s): Will be indicated by the department when the course is offered.
Equate(s): COST*3880, MCS*3880
Restriction(s): Instructor consent required.

Department(s): Department of Marketing and Consumer Studies

REAL*3890 Property Management W (3-0) [0.50]
Financial theory is used to examine the diversification benefits of including real estate with financial assets in an investment portfolio. Diversification strategies within a real estate portfolio are also covered. The marketing and leasing of real estate space culminates in a leasing negotiation exercise between pairs of students. Differing property management issues faced by managers of residential, office, retail, industrial and mixed use properties are covered.

Prerequisite(s): (1 of COST*1800 or REAL*1820 or MCS*1820), (1 of ACCT*2230, BUS*2230, ECON*3560, HTM*3070, MCS*2820, REAL*2820)
Equate(s): COST*3890, MCS*3890
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*4820 Real Estate Appraisal F (3-0) [0.50]
This course deals with the basic principles involved in valuing real estate. The market comparison, cost and income approaches of appraisal are covered. The major emphasis in the course is on using discounted cash flow projections to value income-producing real estate. The term project involves the use of a spreadsheet program to estimate property value for a property chosen by the student. While valuation of single family homes is covered, the main emphasis is on investment real estate.

Prerequisite(s): (1 of CIS*1200, CIS*1500, MCS*2020, (1 of ACCT*2230, BUS*2230, ECON*2560, ECON*3560, MCS*2820, REAL*2820)
Equate(s): MCS*4820
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*4830 Real Estate Development Project W (6-0) [1.00]
This is a capstone course covering the real estate development process and bringing together concepts from all other Real Estate and Housing courses. It deals with the development, redevelopment and renewal of real estate and housing services. Students will complete a phased project that considers all aspects of development feasibility including market analysis, physical constraints, financial viability and government regulation.

Prerequisite(s): 15.00 credits including REAL*3810, REAL*4820
Equate(s): MCS*3820, MCS*4810
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*4840 Housing and Real Estate Law F (3-0) [0.50]
This course lays out the legal principles which guide the expanding and changing body of law dealing with housing and real estate development and forms of occupancy; statutory and regulatory matters are explored.

Prerequisite(s): 9.00 credits including MCS*1000, (1 of COST*1800, MCS*1820, REAL*1820), (MCS*2820 or REAL*2820)
Equate(s): MCS*4840
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

REAL*4870 Sustainable Real Estate F (3-0) [0.50]
This course is designed to give students an understanding of how topics in sustainability and climate change affect and are affected by real estate and urban economics. Students will develop an understanding of the reasons for and benefits of sustainability practices in real estate and planning.

Prerequisite(s): 14.00 credits
Restriction(s): This is a Priority Access Course. Some restrictions may apply during some time periods. Please contact the department for more information.

Department(s): Department of Marketing and Consumer Studies

Last Revision: March 4, 2016

2016-2017 Undergraduate Calendar
## Sociology

The Department of Sociology and Anthropology offers three types of courses: sociology courses with the prefix SOC*; anthropology courses with the prefix ANTH*; and departmental courses with the prefix SOAN*.

Courses will normally be offered in the semesters designated. For information on other semesters these courses will be offered and the semesters those courses without designations will be offered, please check with the department. In addition to regularly scheduled courses, students may elect to do independent study. A student who wishes to do a reading course should first consult the professor with whom he/she wishes to work. Please note: a student is allowed a total of 1.00 credits only for reading courses. SOAN courses will be used towards the Sociology specializations.

Please note: The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC*1100</td>
<td>Sociology S,F,W (3-0) [0.50]</td>
<td></td>
<td>An introductory course dealing with the basic concepts and methods of sociology applied to societies, groups and individuals. Students will gain an understanding of basic social processes such as socialization, social exchange, deviance and conformity, social change and basic social institutions such as the economy, the polity, the family, religion, education. Offering(s): Also offered through Distance Education format. Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*1500</td>
<td>Crime and Criminal Justice F,W (3-0) [0.50]</td>
<td></td>
<td>This course will introduce students to the study of crime and criminal justice. It will examine the various criminological theories, types of criminal behaviour, and the criminal justice system. Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*2010</td>
<td>Canadian Society U (3-0) [0.50]</td>
<td></td>
<td>A description of the structure of Canadian society with its social, political and economic tensions. Prerequisite(s): SOC*1100 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*2070</td>
<td>Social Deviance S,F,W (3-0) [0.50]</td>
<td></td>
<td>An introduction to some of the basic theories of deviance and social control and their application to selected social problems. Offering(s): Also offered through Distance Education format. Prerequisite(s): SOC<em>1100 or SOC</em>1500 Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. Please see the departmental website. Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*2080</td>
<td>Rural Sociology W (3-0) [0.50]</td>
<td></td>
<td>An introduction to the structure and processes of rural society. This course deals with diverse topics such as agrarian movements, the rise of the agro-industrial complex, the role of the state in agriculture, the question of community, and rural environmental issues. A comparative perspective is cultivated, although the primary emphasis is on Canadian society. Prerequisite(s): 1 of ANTH<em>1150, GEOG</em>1220, SOC*1100 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*2280</td>
<td>Society and Environment U (3-0) [0.50]</td>
<td></td>
<td>An introduction to the nature and dimensions of the environmental crisis. The values, interests and social institutions (including government and industry) that promote pollution or environmentalism will be considered. Issues to be examined may include global warming, nuclear energy, environmental toxins, species extinction and population growth pressures. Prerequisite(s): 1 of ANTH<em>1150, GEOG</em>1220, SOC*1100 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*2390</td>
<td>Class and Stratification U (3-0) [0.50]</td>
<td></td>
<td>An examination of the persistent bases of social inequalities such as wealth, income, power and prestige including class formation, class consciousness, political activity and social mobility. Prerequisite(s): SOC*1100 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*3700</td>
<td>Criminological Theory F,W (3-0) [0.50]</td>
<td></td>
<td>This course will examine the development of criminological theory from the late 1700s to contemporary times. Prerequisite(s): SOC*1500 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*3640</td>
<td>Sociology of Social Welfare W (3-0) [0.50]</td>
<td></td>
<td>This course examines the major factors that shape the welfare state and considers what impact welfare policies have on people. Central to the discussion is welfare in Canada and what changes are desirable and feasible. Offering(s): Offered in odd-numbered years. Prerequisite(s): SOAN<em>2112, SOAN</em>2120 Department(s): Department of Sociology and Anthropology</td>
</tr>
<tr>
<td>SOC*3410</td>
<td>Individual and Society U (3-0) [0.50]</td>
<td></td>
<td>Examining social-psychology from the sociological perspective, this course deals with the relation between social and cultural structure, on the one hand, and self or personality on the other. Employing symbolic interactionism and affect control theory, the course shows how social interaction mediated by language is the well-spring of both social cognitions and emotions. Prerequisite(s): SOAN<em>2112, SOAN</em>2120 Department(s): Department of Sociology and Anthropology</td>
</tr>
</tbody>
</table>
XII. Course Descriptions, Sociology

SOC*3490 Law and Society W (3-0) [0.50]
This course examines the social basis of law. Specific topics include the law as an instrument of stability or change, and the role of law makers, law enforcers and interpreters, including the legal profession, the police, judges and courts.
Prerequisite(s): (SOAN*2112 or SOC*2700), SOAN*2120
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations. Please see the departmental website.
Department(s): Department of Sociology and Anthropology

SOC*3710 Youth Justice F,W (3-0) [0.50]
This course examines concerns about youth crime in Canada and elsewhere. It examines the history of legislation to control youth crime, criminal justice processing and practices, public reactions and concerns about youth crime and theoretical models used to explain youth crime.
Prerequisite(s): (SOAN*2112 or SOC*2700), SOAN*2120
Restriction(s): Registration in Anthropology, Criminal Justice & Public Policy or Sociology (major, minor or area of concentration).
Department(s): Department of Sociology and Anthropology

SOC*3730 Courts and Society W (3-0) [0.50]
This course is an introduction to the social processes involved in the court, particularly the criminal court. Typical concerns will be the place of courts in society, public opinion and confidence in courts, purposes and principles of sentencing, sentencing reforms and disparities (e.g., across gender and race), the role of criminal records, juries, the roles of judges, and alternatives to criminal courts.
Prerequisite(s): (SOAN*2112 or SOC*2700), SOAN*2120
Restriction(s): Registration in Anthropology, Criminal Justice & Public Policy or Sociology (major, minor or area of concentration).
Department(s): Department of Sociology and Anthropology

SOC*3740 Corrections and Penology F (3-0) [0.50]
This course will examine the current state of knowledge regarding the role of corrections and penology. It will examine such specific issues as public perception and reaction to the criminal justice system's methods of punishment and treatment of criminal offenders, the effectiveness of sentencing options and policies, including fines, probation, prison sentences and parole. It will also examine the various theoretical and methodological approaches to the study of courts, corrections and penology.
Prerequisite(s): (SOAN*2112 or SOC*2700), SOAN*2120
Restriction(s): Registration in Anthropology, Criminal Justice & Public Policy or Sociology (major, minor or area of concentration).
Department(s): Department of Sociology and Anthropology

SOC*3750 Police in Society F,W (3-0) [0.50]
This course will examine the role of police in society. It will examine theories of policing, the history of policing and such issues as police citizen interaction, relations with visible minorities, methods for controlling police behaviour, and the effectiveness of the police in carrying out specific policy directives.
Prerequisite(s): (SOAN*2112 or SOC*2700), SOAN*2120
Restriction(s): Registration in Anthropology, Criminal Justice & Public Policy or Sociology (major, minor or area of concentration).
Department(s): Department of Sociology and Anthropology

SOC*3840 Seminar in Sociology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.
Prerequisite(s): 10.00 credits including (1 of SOAN*2112, SOC*2080, SOC*2700), SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3850 Seminar in Sociology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.
Prerequisite(s): 10.00 credits including (1 of SOAN*2112, SOC*2080, SOC*2700), SOAN*2120
Department(s): Department of Sociology and Anthropology

SOC*3950 Special Projects in Sociology S,F,W (3-0) [0.50]
This special study option/reading course is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department which the student has taken or is taking. Permission of the instructor who will be supervising the study is required.
Prerequisite(s): 10.00 credits
Restriction(s): Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.
Department(s): Department of Sociology and Anthropology

SOC*4010 Violence and Society F,W (3-0) [0.50]
This course will focus on the changing nature of violence in our society by critically evaluating theory, research and public policy on the causes and control of violence. The links among structural, institutional and interpersonal violence will be examined as well as the social construction of violence, particularly why some forms of violence are considered to be more serious social problems than others.
Prerequisite(s): 14.00 credits including (SOC*2700 or SOC*3310), (SOAN*3120 or POLS*3650)
Restriction(s): Restricted to students in BAH:CJPP and BAH:SOC with an average of 70% in all course attempts in Political Science, Sociology and Anthropology courses
Department(s): Department of Sociology and Anthropology

SOC*4030 Advanced Topics in Criminology F (3-0) [0.50]
This is an in-depth study of selected issues in criminology.
Prerequisite(s): 14.00 credits including (2 of SOC*3490, SOC*3710, SOC*3730, SOC*3740, SOC*3750), (1 of ANTH*3690, SOC*2700, SOC*3310), (SOAN*3120 or POLS*3650)
Restriction(s): Restricted to students in BAH:CJPP with an average of 70% in all course attempts in Political Science, Sociology and Anthropology.
Department(s): Department of Sociology and Anthropology

SOC*4200 Advanced Topics in Criminal Justice W (3-0) [0.50]
This is an in-depth study of issues in criminal justice.
Prerequisite(s): 14.00 credits including (2 of SOC*3490, SOC*3710, SOC*3730, SOC*3740, SOC*3750), (1 of ANTH*3690, SOC*2700, SOC*3310), (SOAN*3120 or POLS*3650)
Restriction(s): Restricted to students in BAH:CJPP with an average of 70% in all course attempts in Political Science, Sociology and Anthropology.
Department(s): Department of Sociology and Anthropology

SOC*4210 Advanced Topics in Rural Sociology U (3-0) [0.50]
A critical examination of the research literature in rural sociology, both in industrial and industrializing societies.
Prerequisite(s): 12.50 credits including (SOAN*2120 or GEOG*2210), SOC*2080
Department(s): Department of Sociology and Anthropology

SOC*4230 Comparative Sociology W (3-0) [0.50]
Societies and social institutions in cross-cultural perspectives. The focus of this course will vary but in every instance will explicitly involve cross-cultural comparisons.
Offering(s): Offered in even-numbered years.
Prerequisite(s): 12.50 credits including SOAN*2120, SOC*2080
Department(s): Department of Sociology and Anthropology

SOC*4300 Theoretical and Methodological Issues U (3-0) [0.50]
This course will provide an opportunity for sociology majors to consider in detail the integration of theoretical and methodological issues at an advanced level. It is meant to engage students in the latest developments in a particular area of the discipline. Course topics will be announced and course outlines will be available at course selection time. This course is highly recommended to students who are considering graduate work in sociology.
Prerequisite(s): 14.00 credits including SOAN*3070, SOAN*3120, SOC*3310
Department(s): Department of Sociology and Anthropology

SOC*4310 Advanced Topics in Canadian Society U (3-0) [0.50]
A detailed examination of selected topics in Canadian society such as regional tensions, aboriginal issues, implications of free trade, constitutional reform, social programs.
Prerequisite(s): 12.50 credits including (ANTH*3690 or SOC*3310), SOAN*3070, SOC*2010
Department(s): Department of Sociology and Anthropology
### SOC*4410 Women, Work and Public Policy U (3-0) [0.50]
In this course students will critically assess the transformation of women's work in contemporary society. A range of topics pertaining to women's work will be explored with particular attention paid to the processes through which class, gender, race, ethnicity, and age shape divisions of work. The course will also focus on theories that have attempted to explain the transformation of women's work.

**Prerequisite(s):** 12.50 credits including (1 of ANTH*2160, SOAN*2112, SOC*2700), SOAN*2120  
**Department(s):** Department of Sociology and Anthropology

### SOC*4420 Sociology of Food Systems F (3-0) [0.50]
This course is directed towards upper level students in sociology and related disciplines who wish to consider the variety of contentious issues surrounding food in the contemporary world. The course will encourage a sociological approach to food systems that is both historically informed and comparative in scope.

**Prerequisite(s):** 12.50 credits including (ANTH*2160 or SOAN*2112), SOC*2080, SOAN*2120  
**Department(s):** Department of Sociology and Anthropology

### SOC*4430 Alternative Social Possibilities W (3-0) [0.50]
This course uses the full range of sociological theory to suggest what alternative ways of organizing society might be possible. Students will examine different accounts of theories of why outcomes are not equal from functionalist theories of stratification to theories of class domination and exploitation to economic market accounts to feminist accounts based on patriarchy. This course will allow students to bring together for themselves a wide range of theories used in other courses and apply them to how their own ideals might be implemented.

**Prerequisite(s):** 12.50 credits including (1 of ANTH*3690, SOC*2700, SOC*3310), (POLS*3180 or SOAN*3120)  
**Department(s):** Department of Sociology and Anthropology

### SOC*4450 Semiotics: Theory & Methodology F (3-0) [0.50]
In this seminar students are introduced to semiotics as an interdisciplinary field, both as a theory and as a methodology.

**Prerequisite(s):** 12.50 credits including SOAN*2120, (ANTH*3690 or SOC*3310)  
**Department(s):** Department of Sociology and Anthropology

### SOC*4700 Seminar: Theoretical Issues in Sociology U (3-0) [0.50]
An examination of selected theoretical issues. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.

**Prerequisite(s):** 12.50 credits including SOC*3310, SOAN*3070, SOAN*3120  
**Department(s):** Department of Sociology and Anthropology

### SOC*4740 Seminar in Sociology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.

**Prerequisite(s):** 12.50 credits including SOC*3310, SOAN*3070, SOAN*3120  
**Department(s):** Department of Sociology and Anthropology

### SOC*4840 Seminar in Sociology F,W (3-0) [0.50]
This course will be offered as a structured seminar on various topics depending upon the interests of the faculty member teaching the course. Topics will be announced and course outlines will be available at course selection. The availability of third and fourth year seminar courses will vary. Students must check with the Department of Sociology and Anthropology to see when seminar courses are available.

**Prerequisite(s):** 12.50 credits including SOC*3310, SOAN*3070, SOAN*3120  
**Department(s):** Department of Sociology and Anthropology

### SOC*4880 Special Projects in Sociology S,F,W (3-0) [0.50]
This special study/reading course option is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department while the student has taken or is taking. Permission of the instructor who will be supervising the project is required.

**Prerequisite(s):** 12.50 credits  
**Restriction(s):** Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.  
**Department(s):** Department of Sociology and Anthropology

### SOC*4890 Special Projects in Sociology S,F,W (3-0) [0.50]
This special study/reading course option is designed to provide advanced undergraduates with an opportunity to explore independently the frontiers and foundations of a field of knowledge. Under supervision, the student will study in greater depth topics related to regular upper-level courses offered in the department while the student has taken or is taking. Permission of the instructor who will be supervising the project is required.

**Prerequisite(s):** 12.50 credits  
**Restriction(s):** Instructor consent required. Please note, a student is allowed a total of 1.00 credits only for reading courses.  
**Department(s):** Department of Sociology and Anthropology

### SOC*4900 Honours Sociology Thesis I S,F,W (3-0) [0.50]
Development and design of an honours thesis proposal conducted under the supervision of a faculty member. Recommended to Honours students.

**Prerequisite(s):** 15.00 credits including SOC*3310, SOAN*3070, SOAN*3120. CJPP students must have 15.00 credits including SOC*2700, SOAN*3120, or POLS*3650  
**Restriction(s):** A cumulative average of 70% in all Sociology and Anthropology courses. Instructor consent required.  
**Department(s):** Department of Sociology and Anthropology

### SOC*4910 Honours Sociology Thesis II S,F,W (3-0) [0.50]
Completion and presentation of honours thesis.

**Prerequisite(s):** SOC*4900  
**Restriction(s):** Instructor consent required.  
**Department(s):** Department of Sociology and Anthropology
XII. Course Descriptions, Sociology and Anthropology

**Sociology and Anthropology**

*Department of Sociology and Anthropology*

The Department of Sociology and Anthropology offers three types of courses: sociology courses with the prefix SOC*; anthropology courses with the prefix ANTH*; and departmental courses with the prefix SOAN*.

**SOAN*2040 Globalization of Work and Organizations F,W (3-0) [0.50]**

This course examines the sociological dimensions of work and occupations. Specific topics may include: the organizational context of work, occupational and labour market structures, job satisfaction, industrial relations, technological change, and the effects of gender, age, race/ethnicity on how work and employment are experienced.

*Prerequisite(s):* ANTH*1150 or SOC*1100

*Department(s):* Department of Sociology and Anthropology

**SOAN*2111 Classical Theory F (3-0) [0.50]**

First part of the two-semester course SOAN*2111/2. Refer to SOAN*2111/2 for course description.

*Prerequisite(s):* 1 of ANTH*1150, SOC*1100, SOC*1500

*Department(s):* Department of Sociology and Anthropology

**SOAN*2112/2 Classical Theory F-W [1.00]**

This course explores the origins and early development of sociological theory in its classical and early contemporary traditions. When you select it you must select SOAN*2111 in the Fall semester and SOAN*2112 in the Winter semester. A grade will not be assigned to SOAN*2111 until SOAN*2112 has been completed.

*Prerequisite(s):* 1 of ANTH*1150, SOC*1100, SOC*1500

*Department(s):* Department of Sociology and Anthropology

**SOAN*2120 Introductory Methods F,W (3-0) [0.50]**

A general introduction to the process of social research emphasizing research design, techniques of data collection, analysis and interpretation of research results.

*Prerequisite(s):* 1 of ANTH*1150, SOC*1100, SOC*1500

*Department(s):* Department of Sociology and Anthropology

**SOAN*2290 Identities and Cultural Diversity U (3-0) [0.50]**

An examination of the interrelationships among Canadian ethnic, racial and linguistic groups including their locations in the Canadian mosaic.

*Prerequisite(s):* ANTH*1150 or SOC*1100

*Department(s):* Department of Sociology and Anthropology

**SOAN*2400 Introduction to Gender Systems S,F (3-0) [0.50]**

An introduction to the examination of the characteristics of gender relationships both historically and cross-culturally. Amongst the emphases are theoretical approaches to gender analysis, methodologies, case studies and attention to themes such as class and stratification, race and ethnicity, identities and global restructuring as these shape gender dynamics.

*Offering(s):* Also offered through Distance Education format.

*Prerequisite(s):* ANTH*1150 or SOC*1100

*Department(s):* Department of Sociology and Anthropology

**SOAN*3070 Qualitative and Observational Methods W (3-0) [0.50]**

Non-quantitative techniques in social research including participant observation, unobtrusive methods, case studies and interviewing.

*Prerequisite(s):* SOAN*2120

*Department(s):* Department of Sociology and Anthropology

**SOAN*3100 Gender Perspectives on Families and Households U (3-0) [0.50]**

This course explores families and households from a gender perspective, using insights from sociology and anthropology.

*Prerequisite(s):* 1 of ANTH*2160, SOAN*2112, SOAN*2400), SOAN*2120

*Restriction(s):* FRHD*3120

*Department(s):* Department of Sociology and Anthropology

**SOAN*3120 Quantitative Methods F (3-0) [0.50]**

This course introduces basic descriptive and inferential techniques used in quantitative social research. Students will acquire the skills needed to perform basic analyses and to read the research literature. They will also acquire skills in using a standard computer package to perform data analyses. Topics include: data organization, sample description, hypothesis testing and measures of association.

*Prerequisite(s):* SOAN*2120

*Restriction(s):* Restricted to students registered in Anthropology, Criminal Justice and Public Policy, Sociology, International Development (GAD or RAD).

*Department(s):* Department of Sociology and Anthropology

**SOAN*3240 Gender & Global Inequality I F (3-0) [0.50]**

In this course, students will develop their ability to use a gender perspective to study social change in the context of global inequalities. Students will develop their knowledge of the core concepts and theories in Gender and Development (GAD) thinking and practice, while exploring the development process from a critical perspective.

*Prerequisite(s):* 1 of ANTH*2160, IDEV*2010, IDEV*2500, SOC*2080

*Department(s):* Department of Sociology and Anthropology

**SOAN*3250 Social Change in Latin America W (3-0) [0.50]**

This course provides a critical, comparative examination of the social-structural and cultural transformations occurring in Latin America in a context of deepening integration with the global north. Topics to feature prominently may include land reform, depesasantization, out-migration, maquiladoras, informal employment, race and ethnic relations, religiosity and religious identification, and social movements. The particular sub-regional focus may vary.

*Prerequisite(s):* 1 of ANTH*2160, IDEV*2010, IDEV*2500, SOC*2080

*Department(s):* Department of Sociology and Anthropology

**SOAN*3680 Perspectives on Development F (3-0) [0.50]**

This course examines theories and processes relating to international development and the responses to these by anthropologists and/or sociologists.

*Prerequisite(s):* 1 of ANTH*2160, IDEV*2010, IDEV*2500, SOC*2080

*Restriction(s):* ANTH*3680. Registration in Anthropology, Sociology or International Development.

*Department(s):* Department of Sociology and Anthropology

**SOAN*4220 Gender and Change in Rural Canada F (3-0) [0.50]**

This course examines socio-cultural structures affecting historically gendered positions and roles in rural Canada.

*Offering(s):* Offered in odd-numbered years.

*Prerequisite(s):* 12.50 credits including (ANTH*2160 or SOC*2080), (SOAN*2120 or WMST*3000)

*Department(s):* Department of Sociology and Anthropology

**SOAN*4230 Gender & Global Inequality II W (3-0) [0.50]**

An in-depth and critical examination of a range of gender issues in the context of development, this course aims to enhance students' ability to critically analyze development theory and practices using gender analysis. It provides students an opportunity to deepen their understanding of gender issues in a global context, with the aim of further equipping them to participate effectively in gender and development-related research, policy-making, and implementation.

*Prerequisite(s):* 12.50 credits including SOAN*3240, (1 of GEOG*3090, POLS*3180, SOAN*2120)

*Restriction(s):* SOAN*4240

*Department(s):* Department of Sociology and Anthropology

**SOAN*4250 Energy and Society F (3-0) [0.50]**

This seminar addresses the links between social relations and various types of energy including petroleum, other hydrocarbons, nuclear and solar energies. Topics may include corporations, states, international organizations and popular movements.

*Prerequisite(s):* 12.50 credits including SOAN*2120, (1 of ANTH*2160, SOAN*2112, SOC*2080)

*Department(s):* Department of Sociology and Anthropology

**SOAN*4260 Migration, Inequality and Social Change W (3-0) [0.50]**

This seminar critically examines the complex relationships between migration, inequality and social change. Students will develop their understanding of key debates in contemporary migration, exploring relevant theory, research and public policy. Topics include the migration-development nexus, the role of migration policies in structuring inequalities, migrant rights and resistance, and transnational families.

*Prerequisite(s):* 12.50 credits including SOAN*2120, (1 of ANTH*2160, IDEV*2500, SOC*2080)

*Department(s):* Department of Sociology and Anthropology
SOAN*4320 Transition from School to Work W (3-0) [0.50]
This applied course examines the evolving research and models in the transitions from school to work area. There is an evolving literature in this area based, in part, on the successful application of research in the transition from high school to postsecondary education. This 'capstone' course also considers the practical issues involved in making such a move, considering the knowledge, skills, and values needed by university students to succeed in the modern workplace (public, private, and not-for-profit sectors) in Canada. Students will complete an "Action Sociology/Anthropology Project," as well as a "Skills Portfolio," and other work related to their own transition.

Restriction(s): Registration in Sociology, Anthropology or Criminal Justice & Public Policy majors in semester 7 or 8.
Department(s): Department of Sociology and Anthropology

SOAN*4500 Community Development U (3-0) [0.50]
An analysis of approaches to community development defined as planned, change-directed action undertaken by individuals, groups and organizations. The course will include the examination of actual community development practices.

Prerequisite(s): (1 of ANTH*2160, IDEV*2010, IDEV*2500, SOC*2080), (GEOG*2210 or SOAN*2120)
Restriction(s): SOAN*3300
Department(s): Department of Sociology and Anthropology
Spanish

School of Languages and Literatures

All courses are conducted in Spanish (reading, writing, and speaking), and literary texts are, at all levels, studied in the original language.

SPAN*1100 Introductory Spanish I F,W (3-1) [0.50]
This course introduces students to the basics of spoken and written Spanish through the study of grammar and vocabulary. The course is for students with no previous studies in Spanish.

Offering(s): Also offered through Distance Education format.
Equate(s): HISP*1100
Department(s): School of Languages and Literatures

SPAN*1110 Introductory Spanish II F,W (3-1) [0.50]
This is a continuation of SPAN*1100. Students will develop and apply increased reading, writing, and oral skills in Spanish through the study of new vocabulary and grammatical structures and culture.

Offering(s): Also offered through Distance Education format.
Equate(s): HISP*1110
Department(s): School of Languages and Literatures

SPAN*2000 Intermediate Spanish I F,W (3-1) [0.50]
This course is for students who have completed either first year University Spanish or 4U Spanish as well as for those who are heritage speakers. This course examines cultural topics and grammatical structures in greater depth while focusing on vocabulary acquisition, and development of oral, written, and listening skills.

Equate(s): HISP*2000
Department(s): School of Languages and Literatures

SPAN*2010 Intermediate Spanish II F,W (3-1) [0.50]
Students will acquire and apply improved skills in reading, writing, and conversation through further study of grammar and culture. The course encourages students to enhance their analytical and linguistic skills through the use of appropriate structures as they formulate and support opinions.

Prerequisite(s): HISP*2000 or SPAN*2000
Equate(s): HISP*2010
Department(s): School of Languages and Literatures

SPAN*2040 Culture of Spain F (3-0) [0.50]
This course is an examination of the historical and cultural events that provided the background for the development of modern Spain, as well as a visual survey of Spanish culture.

Prerequisite(s): HISP*1110 or SPAN*1110
Equate(s): HISP*2040
Department(s): School of Languages and Literatures

SPAN*2990 Hispanic Literary Studies W (3-0) [0.50]
This course is an introduction to literary studies in Spanish. The course focuses on critical terminology and methods through a selection of prose, poetry and drama from Spain and Spanish America.

Prerequisite(s): HISP*1110 or SPAN*1110
Equate(s): HISP*2990
Department(s): School of Languages and Literatures

SPAN*3080 Spanish American Culture W (3-0) [0.50]
This course is a survey through selected readings, class discussion and audio-visual materials of the Spanish American countries, their histories, society, institutions and culture.

Prerequisite(s): HISP*2000 or SPAN*2000
Equate(s): HISP*3080
Department(s): School of Languages and Literatures

SPAN*3210 Topics in Hispanic Studies F,W (3-0) [0.50]
This course, taught in Spanish, with texts in the original language, provides an intensive study of a specific aspect of Hispanic Studies.

Prerequisite(s): ( HISP*3220 or SPAN*3220), ( HISP*3230 or SPAN*3230)
Equate(s): HISP*3210
Department(s): School of Languages and Literatures

SPAN*3220 Literature and Arts I: Spain Pre-1936 F (3-0) [0.50]
This course will be taught in Spanish, with texts studied in the original language, and provides a detailed examination of a theme, period or movement in the literature and/or arts of Spain prior to the Spanish Civil War. Topics explored in given years may include Golden Age Drama, the 19th-century novel or early 20th-century avant garde movements.

Prerequisite(s): HISP*2990 or SPAN*2990
Equate(s): HISP*3220
Department(s): School of Languages and Literatures

SPAN*3230 Literature and Arts II: Latin America Pre-1950 W (3-0) [0.50]
This course provides a detailed examination of a theme, period or movement in the literature and/or arts of Latin America before 1950. Topics explored may include the regionalist novel, modernista poetry or colonial literature. The course will be taught in Spanish, with texts studied in the original language.

Prerequisite(s): HISP*2990 or SPAN*2990
Equate(s): HISP*3230
Department(s): School of Languages and Literatures

SPAN*3240 Topics in Hispanic Linguistics W (3-0) [0.50]
This course offers an introduction to linguistic topics including history of the Spanish language, language variation and change, and Spanish phonetics, which may vary from year to year.

Prerequisite(s): ( HISP*1110 or SPAN*1110), (LAT*1100, LING*1000 are recommended)
Equate(s): HISP*3240
Department(s): School of Languages and Literatures

SPAN*3300 Advanced Spanish I F (3-0) [0.50]
This is an advanced language course that focuses on the refinement of students' written and verbal communication skills in Spanish.

Prerequisite(s): HISP*2010 or SPAN*2010
Equate(s): HISP*3300
Department(s): School of Languages and Literatures

SPAN*3350 Business Spanish W (3-0) [0.50]
A detailed study of the Spanish language as it is currently used in administration and business. It will cover areas such as administrative correspondence, reports, employment, business communication and advertising.

Prerequisite(s): HISP*3500 or SPAN*3500
Equate(s): HISP*3350
Department(s): School of Languages and Literatures

SPAN*3700 Experiential Learning and Language S,F,W (0-0) [0.50]
This course provides an opportunity for independent study based on an experiential project in Spanish or Hispanic Studies. The project (approximately 70 hours) must be approved by a faculty member in the School of Languages and Literatures. It will include research about experiential learning, a reflective piece of writing and a public oral presentation about the project.

Offering(s): Also offered through Distance Education format.
Prerequisite(s): 10.00 credits including 1.50 credits in Spanish.
Restriction(s): A minimum cumulative average of 70% in all Spanish course attempts.
Department(s): School of Languages and Literatures

SPAN*3800 Directed Readings in Hispanic Studies U (3-0) [0.50]
A reading course in Spanish or Spanish American literature designed according to the previous studies and the interests of the individual student. Normally, students will not be permitted to take more than two courses in the Directed Readings sequence.

Prerequisite(s): 1.00 credits from the following: ( HISP*3220 or SPAN*3220), ( HISP*3230 or SPAN*3230), SPAN*3080
Equate(s): HISP*3800
Restriction(s): Instructor consent required.
Department(s): School of Languages and Literatures

SPAN*3810 Directed Readings in Hispanic Studies U (3-0) [0.50]
A reading course in Spanish or Spanish American literature designed according to the previous studies and the interests of the individual student. Normally, students will not be permitted to take more than two courses in the Directed Readings sequence.

Prerequisite(s): 1.00 credits from the following: ( HISP*3220 or SPAN*3220), ( HISP*3230 or SPAN*3230), SPAN*3080
Equate(s): HISP*3810
Restriction(s): Instructor consent required.
Department(s): School of Languages and Literatures
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Prerequisite(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN*4100</td>
<td>Seminar in Hispanic Studies F,W (3-0) [1.00]</td>
<td>This seminar is taught in Spanish, with texts studied in the original language. It provides an opportunity for students to study and research a specific aspect of Hispanic Studies.</td>
<td>(HISP<em>4410 or SPAN</em>4410), (HISP<em>4420 or SPAN</em>4420)</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>SPAN*4410</td>
<td>Senior Seminar on Latin American Post-1950 F (3-0) [1.00]</td>
<td>This seminar is taught in Spanish, with texts studied in the original language, and will explore in detail a major movement, period or theme in post-1950 Latin American literature or culture. Students who have completed this course previously should register in SPAN*4100.</td>
<td>HISP<em>2990 or SPAN</em>2990</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>SPAN*4420</td>
<td>Senior Seminar on Spain or Africa Post-1936 W (3-0) [1.00]</td>
<td>This seminar is taught in Spanish, with readings from texts in the original language. It addresses a major issue, movement, theme or period in the post-1936 literature and culture of Spain, or, in some years, of the Spanish-speaking regions of Africa.</td>
<td>HISP<em>2990 or SPAN</em>2990</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>SPAN*4500</td>
<td>Spanish Translation I F (3-0) [0.50]</td>
<td>This course introduces students to the theory and practice of translation by applying current theoretical principles and linguistic precision to the process of translation from Spanish to English. Students work with a variety of texts from fields including journalism, business, science and literature.</td>
<td>HISP<em>3500 or SPAN</em>3500</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td>SPAN*4840</td>
<td>Research Paper in Hispanic Studies U (3-0) [1.00]</td>
<td>Students will write an intensive research paper in Spanish on a topic relating to a literary or linguistic subject in Hispanic Studies. This paper will be completed within one semester and students will be assigned to a faculty supervisor who will oversee the project.</td>
<td>(HISP<em>3220 or SPAN</em>3220), (HISP<em>3230 or SPAN</em>3230), HISP*4840</td>
<td>School of Languages and Literatures</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Instructor consent required.</td>
</tr>
</tbody>
</table>
Statistics
Department of Mathematics and Statistics

Suggested initial course sequences:
1. For students interested in applied statistics a minimal course sequence is: (STAT*2040 or STAT*2100), STAT*2050, STAT*3210, STAT*3240, STAT*3320.
2. Credit may be obtained in only 1 of STAT*2050 or STAT*2090 and only 1 of STAT*2040, STAT*2060, STAT*2080, STAT*2100. STAT*2120.
3. Graduate students may be admitted to later parts of a sequence by permission of the department.
4. Students who major or minor in Statistics may not receive credit for the following courses unless taken to satisfy the requirements of another program: ECON*2740, PSYC*3210, PSYC*3320.

STAT*2040 Statistics I S,E,F (3-0) [0.50]
This course focuses on the practical methods of Statistics and the topics include: descriptive statistics; univariate models such as binomial, Poisson, uniform and normal; the central limit theorem; expected value; the t, F and chi-square models; point and interval estimation; hypothesis testing methods up to two-sample data; simple regression and correlation; introduction to analysis of variance. Assignments will deal with real data from the natural sciences and involve the use of statistical software for computing and visualization.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): 1 of 4U Calculus and Vectors, Advanced Functions and Calculus, OAC Calculus, MATH*1080
Restriction(s): STAT*1000, STAT*2060, STAT*2080, STAT*2100, STAT*2120
Department(s): Department of Mathematics and Statistics

STAT*2050 Statistics II F,W (3-1) [0.50]
In this course, students will learn how to implement good study design and analyze data from complex studies. This course follows naturally from STAT*2040 and features both previously unseen statistical techniques, as well as studying in greater depth some topics covered in STAT*2040. These topics will include: experiments and observational studies; a review of t-tests and confidence intervals; confounding variables; association and causality; Analysis of Variance (ANOVA); simple and multiple linear regression; binary responses (logistic regression); odds ratios and relative risk; and an introduction to experimental design (including blocked designs and factorial treatment designs). Assignments carried out using modern statistical software will form the basis for mastering the material.
Prerequisite(s): STAT*2040
Restriction(s): BIOL*2250, STAT*2090, STAT*2250
Department(s): Department of Mathematics and Statistics

STAT*2060 Statistics for Business Decisions F (3-0) [0.50]
This course is designed for students interested in the application of statistics in a business setting. Topics covered will include the role of statistics in business decisions, organization of data, frequency distributions, probability, normal and sampling distributions, hypothesis tests, linear regression and an introduction to time series, quality control and operations research.
Offering(s): Also offered through Distance Education format.
Prerequisite(s): (4U mathematics or equivalent) or 0.50 credit in mathematics
Restriction(s): STAT*2040, STAT*2080, STAT*2120. Not available to B.Sc. students.
Department(s): Department of Mathematics and Statistics

STAT*2080 Introductory Applied Statistics I F (3-0) [0.50]
The topics covered in this course include: Frequency distributions, graphing and tabulation of data; measures of central tendency, variability and association; elementary probability; hypothesis testing and confidence intervals; basic concepts of experimental design; treatment designs; simple linear regression and correlation. Examples come from a variety of disciplines, including family studies, education, marketing, medicine, psychology and sociology.
Prerequisite(s): (4U mathematics or equivalent) or 0.50 credit in mathematics.
Restriction(s): STAT*2040, STAT*2080, STAT*2100, STAT*2120. BSc students cannot take this course for credit.
Department(s): Department of Mathematics and Statistics

STAT*2090 Introductory Applied Statistics II W (3-0) [0.50]
The topics covered in this course include: analysis of qualitative data; analysis of variance for designed experiments; multiple regression; exposure to non-parametric methods; power and sample size calculations; special topics such as logistic regression. Examples come from a variety of disciplines, including nutrition, family studies, education, marketing, medicine, psychology and sociology.
Prerequisite(s): STAT*2080
Restriction(s): BIOL*2250, STAT*2050, STAT*2250
Department(s): Department of Mathematics and Statistics

STAT*2100 Probability and Statistics for Engineers F,W (3-0) [0.50]
The topics covered in this course include: Sample spaces; probability, conditional probability and independence; Bayes' theorem; probability distributions; probability densities; algebra of expected values; descriptive statistics; inferences concerning means, variances, and proportions; curve fitting, the method of least squares and correlation. An introduction to quality control and reliability is provided. This course is recommended for students in the B.Sc.(Eng.) program.
Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080
Restriction(s): STAT*2040, STAT*2060, STAT*2080, STAT*2100
Department(s): Department of Mathematics and Statistics

STAT*2230 Biostatistics for Integrative Biology W (3-2) [0.50]
This course introduces students to the design, completion and interpretation of research projects, including identifying categories of research questions, types of data, data gathering methods, efficient graphical and numeric methods to summarize data, standard statistical analyses involving parameter estimation and hypothesis tests and interpreting results in the context of research goals. Statistical concepts underlying practical aspects of biological research will be emphasized. Computer-intensive laboratory sessions will focus on practical data organization, visualization, statistical analysis using software, and interpretation and communication of statistical results.
Prerequisite(s): BIOL*1070
Restriction(s): BIOL*2250, STAT*2040, STAT*2060, STAT*2080, STAT*2120. Restricted to students in the BSc majors in BIOD, MFB, WBC, WLB, and ZOO, and BSES majors in ECOL and ECOLO.
Department(s): Department of Mathematics and Statistics, Department of Integrative Biology

STAT*3100 Introductory Mathematical Statistics I F (3-0) [0.50]
The topics covered in this course include: Probability spaces; discrete and continuous random variables; multivariate distributions; expectations; moments, Chebyshev's inequality, product moments; sums of random variables, generating functions; Gamma, Beta, t and F distributions; central limit theorem; sampling distributions.
Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080, (STAT*2040 or STAT*2120)
Department(s): Department of Mathematics and Statistics

STAT*3110 Introductory Mathematical Statistics II W (3-0) [0.50]
Estimation, unbiasedness, Cramer-Rao inequality, consistency, sufficiency, method of moments, maximum likelihood estimation; hypothesis testing, Neyman-Pearson lemma, likelihood ratio test, uniformly most powerful test; linear regression and correlation; non-parametric methods.
Prerequisite(s): STAT*3100
Department(s): Department of Mathematics and Statistics

STAT*3210 Experimental Design F (3-0) [0.50]
This course presents the basic principles of design: randomization, replication, and local control (blocking); RCBD, Latin square and crossover designs, incomplete block designs, factorial and split-plot experiments, confounding and fractional factorial designs, response surface methodology; linear mixed model computer analysis of the designs; nonparametric methods; Taguchi philosophy.
Offering(s): Offered in even-numbered years.
Prerequisite(s): STAT*2050
Department(s): Department of Mathematics and Statistics

STAT*3240 Applied Regression Analysis F (3-1) [0.50]
This course reviews simple linear regression and introduces multiple regression with emphasis on theory of least squares estimation, residual analysis, and model interpretation. Within the multiple regression context, transformations of variables, interactions, model selection techniques, ANOVA, influence diagnostics and multicollinearity will be discussed. Topics may also include Box-Cox transformations, weighted regression, and logistic and Poisson regression. This course is supplemented with computer labs involving interactive data analysis using statistical software.
Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080, (1 of MATH*1160, MATH*2150, MATH*2160), STAT*2050
Department(s): Department of Mathematics and Statistics

STAT*3320 Sampling Theory with Applications F (3-0) [0.50]
This course focuses on the design and analysis of survey samples for finite populations. Topics covered include: non-probability and probability sampling, simple random sampling, stratified sampling, cluster sampling, systematic sampling, double sampling, two-phase sampling and multi-stage cluster sampling. Expectation, variance estimation procedures and sample size calculations for the above techniques are included.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): 1 of IPS*1510, MATH*1210, MATH*2080, (1 of MATH*2050, STAT*3240, STAT*3100)
Department(s): Department of Mathematics and Statistics
### STAT*3510 Environmental Risk Assessment W (3-0) [0.50]
Contemporary statistical methods for assessing risk are discussed. Topics covered include: dose-response models, survival analysis, relative risk analysis, bioassay, estimating methods for zero risk, trend analysis, survey of models for assessing risk. Case studies are used to illustrate the methods.

**Prerequisite(s):** (1 of IPS*1500, MATH*1000, MATH*1080, MATH*1200), (1 of BIOL*2250, STAT*2050, STAT*2250)

**Department(s):** Department of Mathematics and Statistics

### STAT*4050 Topics in Applied Statistics I F (3-0) [0.50]
Topics such as statistical computing procedures, quality control, bioassay, survival analysis and introductory stochastic processes will be covered. This course is intended for statistics students and interested students from other disciplines who have appropriate previous courses in statistics. Information on particular offerings will be available at the beginning of each academic year.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** STAT*3110, STAT*3240

**Department(s):** Department of Mathematics and Statistics

### STAT*4060 Topics in Applied Statistics II F (3-0) [0.50]
Same as for STAT*4050.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** STAT*3110, STAT*3240

**Department(s):** Department of Mathematics and Statistics

### STAT*4150 Topics in Applied Statistics III F,W (3-0) [0.50]
In this course students will discuss selected topics at an advanced level as in STAT*4050, but with different choice of topics.

**Prerequisite(s):** STAT*3110, STAT*3240

**Department(s):** Department of Mathematics and Statistics

### STAT*4340 Statistical Inference W (3-0) [0.50]
This course reviews and extends the theory of estimation introduced in STAT*3110. Topics including point estimation, interval estimation, hypothesis testing and decision theory will be presented from both the frequentist and likelihood-based perspectives. Foundational issues concerning the frequentist and Bayesian paradigms will also be discussed.

**Prerequisite(s):** STAT*3110, STAT*3240

**Department(s):** Department of Mathematics and Statistics

### STAT*4350 Applied Multivariate Statistical Methods F (3-0) [0.50]
This course introduces the multivariate normal, and Wishart and Hotelling’s T-square distributions. Topics covered include: statistical inference on the mean vector, canonical correlation, multivariate analysis of variance and covariance, multivariate regression, principal components analysis, and factor analysis. Topics will be illustrated using examples from various disciplines.

**Prerequisite(s):** (1 of MATH*1160, MATH*2150, MATH*2160), STAT*3110, STAT*3240

**Department(s):** Department of Mathematics and Statistics

### STAT*4360 Applied Time Series Analysis F (3-0) [0.50]
This course will investigate the nature of stationary stochastic processes from the spectral and time domain points of view. Aspects of parameter estimation and prediction in a computationally intensive environment will be the presentation style. The methods developed in this course will have applicability in many sciences such as engineering, environmental sciences, geography, soil sciences, and life sciences.

**Prerequisite(s):** STAT*3240 or Instructor consent.

**Department(s):** Department of Mathematics and Statistics

### STAT*4600 Advanced Research Project in Statistics F,W (0-6) [1.00]
Each student in this course will undertake an individual research project in some area of statistics, under the supervision of a faculty member. A written report and a public presentation of the project will be required.

**Restriction(s):** Approval of a supervisor and the course coordinator.

**Department(s):** Department of Mathematics and Statistics
XII. Course Descriptions, Studio Art

Studio Art
School of Fine Art and Music

Admission to all Studio Art courses is based on the university's policy with regard to Priority Access Courses. Admission to ALL Studio Courses at the 3000-level and above is restricted to students who:

1. are currently registered in the Art History or Studio Art Specializations of the Bachelor of Arts Program;
2. have an average of 70% in all ARTH and SART course attempts;
3. have completed (ARTH*1220 or ARTH*2200), (ARTH*1510 or ARTH*1520), SART*1050 and SART*1060.

Studio supplies: The majority of the cost of supplies must be borne by the student. In order to permit the University to subsidize this cost and to allow for savings through discount buying, some materials are obtained through the School of Fine Art and Music by payment of a lab fee. The amount of the fee is established for each semester prior to registration.

Note: Due to limited faculty resources and facilities, enrolment in these courses may be restricted to Studio Art majors or minors.

SART*1050 Foundation Studio F,W (2-4) [0.50]
This course provides a foundation in the technical and theoretical aspects of contemporary two-dimensional media. Through a combination of lectures, studio projects, readings and a field trip the students will explore perceptual, conceptual and topical dimensions of art making practices.

Restrictions: Registration in semesters one, two, three or four. May not register in SART*1060 in the same term. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations during certain periods. Please see the departmental website for more information.
Department(s): School of Fine Art and Music

SART*1060 Core Studio F,W (2-4) [0.50]
This course provides a foundation in the technical and theoretical aspects of contemporary three-dimensional and time-based media. Through a combination of lectures, studio projects and guest speakers, students will explore perceptual, conceptual and topical dimensions of contemporary art making practices.

Restrictions: Registration in semesters one, two, three or four. May not register in SART*1050 in the same term. This is a Priority Access Course. Enrolment may be restricted to particular programs or specializations during certain periods. Please see the departmental website for more information.
Department(s): School of Fine Art and Music

SART*1150 Contemporary Artistic Practice S,W (3-0) [0.50]
This course, which uses a web-based platform, is an introduction to contemporary art and artists. Lectures will be augmented by studio art assignments and online discussions in order to develop an understanding of material covered in the course.
Offering(s): Offered through Distance Education format only.
Department(s): School of Fine Art and Music

SART*2090 Drawing I F,W (0-6) [0.50]
This course will consider the activity of drawing as an ability to work with a varied range of applications – all of them concerned with the investigation and development of idea through making an image. This course is an introduction to the basic concepts, techniques and media of drawing, through disciplined observational and imaginative study.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisites).
Department(s): School of Fine Art and Music

SART*2200 Painting I F,W (0-6) [0.50]
This course is designed to introduce students to the fundamentals of observational painting in oil and acrylic paint. In addition to developing skill in colour-mixing, composition, and using value to create space and form, students will learn proper care for tools and how to prepare supports. Regular discussions of contemporary and relevant historical examples will assist students to understand their work as part of the broader conversation and discourse in painting. Prior or concurrent Drawing classes are recommended.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2300 Sculpture I F,W (0-6) [0.50]
This course is an introduction to contemporary sculptural concerns through hands-on projects and historical readings. Students will be actively engaged in exploring a variety of materials and ideas including modular construction, scale and soft sculpture.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1050 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2460 Introductory Printmaking I F (0-6) [0.50]
This course is an introduction to the traditional printmaking media of intaglio and relief printing. This course will focus on various methods of creating an etching, applying hard ground for drawing with a needle point, using acid to etch the lines, and open bite areas. Further work will involve use of aquatint, soft ground, Chine-collé and printing the etching plate. Students will also learn woodblock printing, including printing in a single colour and then reworking the block to create a colour reduction print. Both types of printmaking are treated in a traditional manner to acquire the necessary skills to print editions.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2470 Introductory Printmaking II W (0-6) [0.50]
This course is an introduction to the techniques of the traditional printmaking media of lithography and silkscreen. The course will focus upon the technique of drawing in grease into limestone blocks. Students will be able to prepare and work an image into the stone, etch with acid and gum, and then print a viable edition on handmade paper. Students are introduced to the technique of silkscreen using cut stencils, hand drawn positive and photomechanical production skills. Students will be able to print both types of print media at the end of the course.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2610 Photography I F,W (0-6) [0.50]
This course is an introduction to the historic, conceptual, and material nature of photography in contemporary art. Course content will include basic digital, analogue and studio techniques, and an exploration of historic techniques such as the Photogram and Camera Obscura. Readings, discussions, and assignments will forge connections between historic and contemporary modes of image making, and will encourage students to experiment with innovative ways of utilizing the photographic medium.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2700 Introduction to Computer Graphics F (0-6) [0.50]
This course provides an in-depth introduction to the image making possibilities of digital art in the field of computer graphics. Students will learn various methods of working with scanned and imported photographic material. Through a number of directed projects students will acquire a working knowledge of Photoshop. Various projects will introduce aspects of layout and graphic design as well as how to manage large composite imaginary images. The course will also focus on preparing ideas and images for a personal art website. Some computer experience is recommended.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2710 Drawing Graphics on the Computer W (0-6) [0.50]
This course introduces digital drawing on the computer, specifically, translating traditional media into complex vector graphics. Through a number of directed projects students will acquire a working knowledge of object/vector graphics. Graphic design topics will be introduced as well as signage and logos. A large perspective drawing will be completed. Design layouts and text work will be emphasized as well as some 3D projects. Some computer experience is recommended.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1060 can be taken as co-requisite).
Department(s): School of Fine Art and Music

SART*2800 Extended Practices I F,W (0-6) [0.50]
This course introduces students to a variety of different processes common to the contemporary studio artist, with an emphasis on time-based and interdisciplinary forms of production. Students will be actively engaged in exploring a variety of skills, material processes and concepts, including basic techniques in video, audio and forms of production such as the, artist multiple, site-specifically and other strategies of conceptual art. An understanding of the technical and theoretical concerns found in contemporary art will provide a solid base for upper level courses, where students will develop a stronger capacity to uncover and experiment with media or forms that are more appropriate for their ideas in both thematic and independently oriented projects.
Prerequisite(s): (1 of ARTH*1220, ARTH*1510, ARTH*1520), SART*1050, SART*1060; (SART*1050 can be taken as co-requisite).
Department(s): School of Fine Art and Music
SART*3090 Drawing II F,W (0-6) [0.50]
This course attempts to foster understanding of the basis and technical issues necessary to the making of drawings while introducing the philosophical and critical issues related to the discipline. This course will consider drawing as an activity with a wide range of applications.
Prerequisite(s): SART*2090
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3200 Painting II F,W (0-6) [0.50]
In this course, technical, aesthetic and philosophical issues central to contemporary painting will be investigated. These include diverse approaches to representational painting today as well as an introduction to abstraction and other non-representational strategies. Activities such as class discussions, field trips and presentations on contemporary artists will assist students to situate their own developing practices within the field.
Prerequisite(s): SART*2200
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3300 Sculpture II F,W (0-6) [0.50]
This is a technical course in which specific tools of the wood and metal shops will be studied in depth through assignments. Conceptual issues will be examined in relation to the creation of objects.
Prerequisite(s): SART*2300
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3410 Intaglio F (0-6) [0.50]
This is an in-depth investigation into aspects of intaglio printmaking. Traditional skills will be extended into working with computer images and exposing photo-generated images onto Photopolymer plates. Personal image making will be developed using multiple plates and printing in colour.
Offering(s): Offered in even-numbered years.
Prerequisite(s): SART*2460 or SART*2470
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3450 Lithography F (0-6) [0.50]
This is an in-depth exploration of the art of lithography in which students will learn both traditional and contemporary approaches; from working on limestone blocks to preparing and printing photo-litho plates. The course may include using computer graphics to develop images suitable for four-colour separations in photo-litho. Exposing and printing four colour (CMYK) films onto photo litho plates is similar to commercial photo-lithography. The student will learn to print multiple plates in registration to create fine art lithography.
Offering(s): Offered in odd-numbered years.
Prerequisite(s): SART*2460 or SART*2470
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3480 Web Development and Design F (0-6) [0.50]
This course introduces students to key approaches behind the design, development, and delivery of a modern website. Areas of focus may include: composition, HTML and Cascading Style Sheets (CSS) code, and website integration with social media. Students will work towards creating a final website project, focusing on their personal portfolio, to be made available online for public engagement.
Prerequisite(s): SART*2700 or SART*2710
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3600 Digital & Non-Silver Photography W (0-6) [0.50]
This course combines non-silver and digital photographic methods as the basis for an aesthetic investigation into the formal, conceptual, technical and theoretical issues related to historic and new technologies in photographic practice. Course content will include non-silver printing such as Platinum/Palladium, large format photography, and an exploration of scale in digital photographic production. In-class discussions, readings and seminars are designed to provide students with a critical and historical understanding of the art-making process.
Prerequisite(s): SART*2610
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3750 Photography II F,W (0-6) [0.50]
This course encourages visual problem solving and analytical skills within an experimental and exploratory studio arts practice. Course material is presented through lectures, labs, and critiques to engage with the form, content and technical attributes of the medium. Scale, electronic flash lighting, medium format photography, and darkroom printing will be covered. In-class discussions, readings and seminars are designed to provide students with a critical and historical understanding of the art-making process.
Prerequisite(s): SART*2610
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3770 Extended Practices II F,W (0-6) [0.50]
This course examines a number of different contemporary art forms. Students will explore and consider ideas surrounding the found object, the use of language and text in art, the theory of the derive and appropriation. Students will continue developing their technical skills in video and sound production and are encouraged to explore such forms as collage, assemblage, the artist book and/or multiple, performance, relational art, and other avant-garde and contemporary art strategies. Critical readings will introduce students to the issues around these alternative forms of production. Class discussions will provide an opportunity for the student to engage and develop an understanding of related theoretical terms and concepts.
Prerequisite(s): SART*2800
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*3800 Experiential Learning I F,S,W (0-6) [0.50]
This is an independent study course based on Studio Art-related practical experience. Evaluation will be based on assignments related to work duties. Written proposals, signed by the supervisor and a faculty member, must be submitted to the Director for the School for approval by the last day of course selection in the Fall (for Winter) or Winter (for the following Summer or Fall).
Prerequisite(s): 3.00 credits in Studio Art
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts. Instructor consent required.
Department(s): School of Fine Art and Music
SART*3900 Experiential Learning II S,F,W (0-6) [0.50]
This course provides students with an opportunity to continue the workplace or activity begun in SART*3800 in greater depth, or to experience a new work/study situation. Evaluation will be based on assignments related to work duties. Written proposals, signed by the supervisor and a faculty member, must be submitted to the Director for the School for approval by the last day of course selection in the Fall (for Winter) or Winter (for the following Summer or Fall) semester.
Prerequisite(s): SART*3800 and 3.50 credits in Studio Art
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 80% in all ARTH and SART course attempts.
Restriction(s): Instructor consent required.
Department(s): School of Fine Art and Music

SART*4090 Drawing III F (0-6) [0.50]
This course will study the technical development of observational drawing as well as the experimental and intentional development of drawing as a contemporary art form. Drawings will be made and discussed with attention to semiotic theory in order to examine the production and interpretation of meaning.
Prerequisite(s): SART*3090
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4130 Drawing IV W (0-6) [1.00]
This is an advanced course which explores drawing through individually oriented production supported by critical study of diverse contemporary approaches to the medium. In this course drawings will continue to be considered in the light of semiotic theory in order to examine the production and interpretation of meaning.
Prerequisite(s): SART*4090
Department(s): School of Fine Art and Music

SART*4180 Special Topics in Painting W (0-6) [0.50]
This is a variable-content advanced course in which the specific theme, subject, or technique will vary according to the instructor and will consist of topics not otherwise available in the curriculum. Examples include: Digital painting, Watercolour, Installation and painting, Narrative in painting, etc. Studio work will be supported by readings in contemporary theory and criticism and lectures on pertinent artists.
Prerequisite(s): (ARTH*2220 or ARTH*2480), SART*3200
Department(s): School of Fine Art and Music

SART*4200 Painting III F (0-6) [0.50]
This course focuses on experimentation as a means to investigate the possibilities available to a contemporary painter. Representational and non-representational approaches will continue to be explored, with emphasis on the development of the student's own research interests. Critical readings, in-class discussions and gallery visits help position their research within the discourse. Paintings will be analyzed with attention to semiotic theory in order to examine the production and interpretation of meaning.
Prerequisite(s): SART*3200,
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4240 Painting IV W (0-6) [1.00]
This capstone course offers advanced investigations into the theory and practice of painting, with strong emphasis on the development of a critically informed and engaged individual painting practice. Studio work is supplemented with critical readings and a gallery field trip. Students collaborate to mount an exhibition of their work at the end of the semester.
Prerequisite(s): SART*4200 or SART*4230
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4300 Sculpture III F,W (0-6) [0.50]
Contemporary issues in sculpture will be addressed through studio assignments, and independent work undertaken in close consultation with the instructor. Interdisciplinary projects based on the students' own research are strongly encouraged.
Prerequisite(s): SART*3300
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4330 Senior Sculpture F,W (0-6) [1.00]
In this course the student will produce major works with attention to conceptual acuity and material competence, in close consultation with the instructor. Interdisciplinary projects based on the students' own research are strongly encouraged.
Prerequisite(s): SART*4300
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4410 Experimental Printmaking W (0-6) [0.50]
This course focuses on a professional level of printmaking with a particular focus upon the design and printing of a series of multi-coloured prints. During the course at least three of the printmaking media will be attempted. Preliminary ideas and preparations for the complex designs will be created using computer graphics. The course also includes student presentations and a brief research paper on a recognized printer.
Prerequisite(s): 3 of SART*2460, SART*2470, SART*3410, SART*3450, SART*3470
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4470 Advanced Printmaking W (0-6) [1.00]
This course is an in-depth study of various printmaking media including the use of computer graphics and advanced manipulation of photo based images to create a personal portfolio of thematically coherent prints. Seminar presentation is required.
Prerequisite(s): SART*4410
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4660 Topics in Extended Practices F (0-6) [0.50]
For this advanced course, the specific theme, subject, or technique in extended practices will vary according to the instructor or instructors and will consist of topics not otherwise available in the curriculum. Topics may include Performance Art, Installation, Interactive Art, Relational Art, Alternative Venues and Artists Multiples.
Prerequisite(s): SART*3770
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

SART*4670 Topics in Extended Practices F (0-6) [0.50]
For this advanced course, the specific theme, subject, or technique in extended practices will vary according to the instructor or instructors and will consist of topics not otherwise available in the curriculum. Topics may include Performance Art, Installation, Interactive Art, Relational Art, Alternative Venues and Artists Multiples.
Prerequisite(s): SART*3770
Restriction(s): Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.
Department(s): School of Fine Art and Music

Last Revision: March 4, 2016
2016-2017 Undergraduate Calendar
This course offers some directed projects, but also provides students with the opportunity to generate, sustain, and complete a self-directed body of work. Students will explore various approaches to historical and contemporary modes of photography, with an emphasis on experimental, hybrid, and material-based approaches to the medium. An emphasis will be placed on conceptual development, exploring the interaction of formal and representational concerns within the practice of photography.

**Prerequisite(s):** SART*3600 or SART*3750

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.

**Department(s):** School of Fine Art and Music

This course will emphasize research, problem solving, technical experimentation, and material and aesthetic project development. Student can choose to work with black and white, colour, non-silver, digital or hybrid photographic techniques in order to produce a body of work for exhibition. Opportunities for interdisciplinary approaches to photographic practice and independent and sustained research methodologies will be encouraged. The course will also cover professional skills, such as how to write an artist statement, how to apply for funding, and how to organize, curate and install a group exhibition.

**Prerequisite(s):** SART*4700

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.

**Department(s):** School of Fine Art and Music

This is an advanced and specialized course in individual studio work, which focuses on the development of independent study strategies. Students will research and complete a major self-directed project. This course is not intended for all Honours students. This course is intended to assist in the preparation for graduate school and professional activities in the Arts.

**Prerequisite(s):** A minimum of 2 courses at the 4000-level in Studio Arts, a minimum cumulative average of at least 80% in SART courses and ARTH courses

**Restriction(s):** Instructor consent required, or the Director of the School consent required.

**Department(s):** School of Fine Art and Music

This course offers some directed projects, but also provides students with the opportunity to generate, sustain, and complete a self-directed body of work. Students will explore various approaches to historical and contemporary modes of photography, with an emphasis on experimental, hybrid, and material-based approaches to the medium. An emphasis will be placed on conceptual development, exploring the interaction of formal and representational concerns within the practice of photography.

**Prerequisite(s):** SART*3300

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.

**Department(s):** School of Fine Art and Music

This is an advanced course which focuses on a specific topic, concept or technique in sculpture. Subject matter will vary according to the instructor or instructors and will consist of topics not otherwise available in the curriculum. Topics may include, for example, digital media, public art, mold making, and installation.

**Prerequisite(s):** 1 of SART*3770, SART*4660, SART*4670

**Restriction(s):** Registration is limited to students registered in the Art History or Studio Art specializations with an average of 70% in all ARTH and SART course attempts.

**Department(s):** School of Fine Art and Music
### Theatre Studies

**School of English and Theatre Studies**

**NOTES:** Admission to the following courses is not guaranteed, and is by audition, submission of a portfolio and/or interview only:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offering(s)</th>
<th>Prerequisite(s)</th>
<th>Restriction(s)</th>
<th>Department(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>THST*3110</td>
<td>Acting II</td>
<td>[0.50]</td>
<td>THST*3120</td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*3120</td>
<td>Acting III</td>
<td>[0.50]</td>
<td></td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*3410</td>
<td>Special Studies in Production I</td>
<td>[0.50]</td>
<td>THST*3420</td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*3420</td>
<td>Special Studies in Production II</td>
<td>[0.50]</td>
<td></td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*3600</td>
<td>Directed Readings</td>
<td>[0.50]</td>
<td></td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*3630</td>
<td>Special Studies in Studio Practice</td>
<td>[0.50]</td>
<td></td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
<tr>
<td>THST*4650</td>
<td>Honours Essay</td>
<td>[0.50]</td>
<td></td>
<td></td>
<td>School of English and Theatre Studies</td>
</tr>
</tbody>
</table>

*For times and dates of auditions, interviews, or the deadline for applications, students should consult the School. All students applying for entry to these courses must obtain the signature of the Theatre Studies Program advisor or the Director, who will admit students only after consultation with the instructor.*

Iterations of some courses may include field trips for which there are supplemental fees.

The Theatre Studies program has a particular interest in the drama and theatre of Canada. Course offerings will reflect this concentration where appropriate.

#### THST*1040 Introduction to Performance F,W (3-0) [0.50]
This course functions as a foundation for the study of theatre, performance, and media. Students will be introduced to the interpretative terms and theories of theatre, performance, and media as an academic discipline and to the conceptual and social terms of theatre and media as cultural practices. This course includes attendance at performances.

**Department(s):** School of English and Theatre Studies

#### THST*1150 Seminar in Theatre Studies W (3-0) [0.50]
A focused study of a selected topic in a small-group learning experience. Students will be introduced to research methodologies and offered opportunities to strengthen their writing and speaking skills. Variable course content. Consult the School's website for current topics.

**Offering(s):** Last offering - Winter 2017
**Restriction(s):** Restricted to students who are declared majors in Theatre Studies.

**Department(s):** School of English and Theatre Studies

#### THST*1190 Theatre Workshop I W (3-2) [0.50]
This course provides a fundamental introduction to the processes of theatrical production, with practical application and study of the analytic, creative and technical skills that bring an idea to life on the stage. Students will learn how to analyze a playscript from the perspective of the director, actor, designer and technician and will also be introduced to the fundamentals of theatrical technology, scene study and production decision-making.

**Co-requisite(s):** THST*1040

**Department(s):** School of English and Theatre Studies

#### THST*1200 The Languages of Media F (3-2) [0.50]
This introductory course examines film, radio, television, and digital media, focusing on the codes and conventions used by different media to create relationships between structure and content, to make meaning.

**Department(s):** School of English and Theatre Studies

#### THST*1270 Theatre Research I W (3-0) [0.50]
This course introduces students to scholarly research and writing in the discipline of Theatre Studies through variable-topic theoretical inquiry and secondary research. Emphasis will be placed upon the application of theory to analysis, the use of evidence, the development of a research question and the practice of scholarly writing.

**Restriction(s):** THST*1150

**Department(s):** School of English and Theatre Studies

#### THST*2010 Theatre Historical Studies F (3-0) [0.50]
This course will introduce students to the historical study of theatre by surveying developments in Western theatre from the classical period to twentieth-century modernism. Building on the historicity of Western theatre, the course also considers the historical conditions that have produced contemporary theatre practice in Canada.

**Offering(s):** Last offering - Fall 2016

**Prerequisite(s):** THST*1040

**Equate(s):** DRMA*2300, DRMA*3180

**Department(s):** School of English and Theatre Studies

#### THST*2050 Devising W (2-3) [0.50]
This course introduces students to the play creation techniques of devising, in which the script is generated collaboratively by the creative team (performers, directors, designers and dramaturges) in the rehearsal process. Students work collaboratively on demonstration exercises including physicalization, visualization, improvisation, and scripting, culminating in rehearsing and performing original material. Significant attention is paid to creative and collaborative problem solving in this studio course.

**Offering(s):** First offering - Winter 2018

**Prerequisite(s):** THST*1040, THST*1190

**Restriction(s):** THST*2080 Restricted to students in a Theatre Studies specialization.

**Department(s):** School of English and Theatre Studies

#### THST*2120 Writing for Performance F (3-0) [0.50]
This course is a theoretical and applied study of creative writing for performance.

**Prerequisite(s):** THST*1040

**Department(s):** School of English and Theatre Studies

#### THST*2190 Theatre Workshop II F (3-2) [1.00]
This course is an intensive study of the methods of theatrical production, organized around a creative project. Students will rotate through modules focusing on skill development in the areas of acting, design, costumes, sets, lights, sound, media and stage management. Depending on the scale of the production and the class size, this course may be co-taught with Theatre Workshop III. Students in the course may undertake performance or production roles in a public performance.

**Offering(s):** First offering - Fall 2017

**Prerequisite(s):** THST*1040, THST*1190

**Restriction(s):** THST*2230 Restricted to students in a Theatre Studies specialization.

**Department(s):** School of English and Theatre Studies

#### THST*2220 Intro to Technical Theatre F,W (2-3) [0.50]
An introduction to the theory and practice of theatrical production, including sets, costumes, lighting, sound, props and technical drawing. Students are expected to serve on technical crews on some evenings and weekends during School productions.

**Offering(s):** Last offering - Winter 2017

**Prerequisite(s):** DRMA*1000 or THST*1040

**Equate(s):** DRMA*2220

**Department(s):** School of English and Theatre Studies

#### THST*2240 Introduction to Theatre Design W (3-0) [0.50]
Students will be introduced to theories, techniques and materials in five areas of theatrical design: sets, props, lighting, sound, and costume. The course also considers the history of design for the theatre, attending to the relationship between design and other forms of cultural expression.

**Offering(s):** Last offering - Winter 2017

**Prerequisite(s):** DRMA*1000 or THST*1040

**Equate(s):** DRMA*2220

**Department(s):** School of English and Theatre Studies

#### THST*2270 Theatre Research II W (3-0) [0.50]
This variable content course will introduce students to aspects of the practice of scholarly research in relation to theatre studies. Students will be encouraged to consider resources and materials available to scholars of theatre and be introduced to the conventions of scholarly writing in theatre studies.

**Offering(s):** First offering - Winter 2018

**Prerequisite(s):** THST*1270

**Restriction(s):** THST*3540, THST*3550, THST*3650, THST*3660 Restricted to students in a Theatre Studies specialization.

**Department(s):** School of English and Theatre Studies

#### THST*2450 Approaches to Media Studies W (3-0) [0.50]
This course examines major approaches to the study of communication, including cybernetic, anthropological, semiotic and other perspectives, focusing on how people transmit information and construct meaning.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** THST*1200

**Department(s):** School of English and Theatre Studies
### THST*3120 Acting III F,W (2-3) [0.50]

A continuation of THST*3110. Students will perform in a public production. Admission is by audition only.

**Offering(s):** Last offering - Winter 2017  
**Prerequisite(s):** THST*3110  
**Equate(s):** DRMA*3120  
**Restriction(s):** Instructor consent required.  
**Department(s):** School of English and Theatre Studies

### THST*3140 Performance and the Past W (3-0) [0.50]

This variable content course focusses on a selected area of theatre history. Students will be encouraged to integrate primary and secondary materials in a presentation of research findings which may take a range of forms including an essay, media or theatrical presentation.

**Offering(s):** First offering - Winter 2018  
**Prerequisite(s):** 7.50 credits, including THST*1040  
**Restriction(s):** THST*2010  
**Department(s):** School of English and Theatre Studies

### THST*3170 Special Topics F (3-0) [0.50]

This course provides students with the opportunity to work intensively in an area of theatre work in a project defined by faculty research. The material and topic will vary but the course will consistently engage with an area of creative practice, such as scenography and design, directing, acting studio or playwriting. This course may be offered as a performance-centered studio, a design studio workshop, or a playwriting seminar, depending on the instructor. Consult the Theatre Studies website for more information on a specific iteration of the course.

**Offering(s):** First offering - Fall 2017  
**Prerequisite(s):** 7.50 credits, including THST*2270  
**Restriction(s):** THST*3540, THST*3550, THST*3620, THST*3650, THST*3660, THST*3850 Restricted to students in a Theatre Studies specialization.  
**Department(s):** School of English and Theatre Studies

### THST*3190 Theatre Workshop III F (3-2) [1.00]

Students in this course will undertake the design, technical production and performance of a fully realized theatrical production. All production assignments (cast, technical crews, front of house, dramaturgy, assistant director, assistant designer) will be drawn from students enrolled in the course and in cooperation with senior students enrolled in THST*4500. The course will be taught as a workshop with skill-specific modules, out-of-class rehearsals, and technical training crew calls. Depending on the scale of the production and the class enrolments, this course may be co-taught with THST*2190.

**Offering(s):** First offering - Fall 2017  
**Prerequisite(s):** 7.50 credits, including THST*2190  
**Restriction(s):** THST*3080, THST*3110, THST*3120, THST*3220, THST*3320 Restricted to students in a Theatre Studies specialization.  
**Department(s):** School of English and Theatre Studies

### THST*3220 Technical Production I F,W (2-3) [0.50]

This course offers students advanced engagement with the theory and application of theatrical crafts, and includes work in a technical capacity on a School production.

**Offering(s):** Last offering - Winter 2017  
**Prerequisite(s):** DRMA*2220 or THST*2230  
**Equate(s):** DRMA*3220  
**Department(s):** School of English and Theatre Studies

### THST*3230 Technical Production II F,W (2-3) [0.50]

A continuation of THST*3220, focusing on the theory and application of theatrical crafts, and including work in a technical capacity on a School production. Students will normally work in different capacities in THST*3220 and THST*3320.

**Offering(s):** Last offering - Winter 2017  
**Prerequisite(s):** THST*3220  
**Equate(s):** DRMA*3230  
**Department(s):** School of English and Theatre Studies
XII. Course Descriptions, Theatre Studies

THST*3300 Sexuality and The Stage F (3-0) [0.50]
This course focuses on issues relating to the staging of sexuality. The course will theorize and historicize the representation of sexual diversity. Variable content course. Topics may include, for example, the theatrical staging of gays, lesbians, bisexuals, and transgendered people, queer theatre; and the privileging of heterosexuality on the stage.
Offering(s): Offered in even-numbered years. Last offering - Fall 2016
Prerequisite(s): THST*2010 or 1.00 credits in English
Department(s): School of English and Theatre Studies

THST*3340 Voice and Text in Performance S (0-6) [0.50]
Within a studio context, students are introduced to techniques of voice, particularly in relation to performing verse. The course is taught as an intensive lab in conjunction with the Stratford Festival and is offered in Stratford, Ontario. The course may involve a lab fee. Admission to the course is by application to the School of English and Theatre Studies. Further information is available from the School.
Prerequisite(s): 2.50 credits in Theatre Studies including (1 of THST*3080, THST*3110, THST*3190)
Co-requisite(s): THST*3260
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3360 Political Intervention Theatre W (3-0) [0.50]
This course examines major theories, practices and textualities of radical theatre interventions in politics in the twentieth- and twenty-first centuries. It traces the historical development and genealogies of interventionist processes, with particular attention to the transnational circulation of practices and methods.
Offering(s): Offered in even-numbered years. Last offering - Winter 2017
Prerequisite(s): THST*2010 or 1.00 credits in English
Department(s): School of English and Theatre Studies

THST*3410 Special Studies in Production I F,W (2-3) [0.50]
Students will serve in such capacities as stage managers, assistant stage managers, assistant directors, assistant designers, dramaturges, producers, or publicists on School productions, and will study the functions of these roles in theatrical production. Admission is by application to the School.
Offering(s): Last offering - Winter 2017
Prerequisite(s): THST*3220, (1 of THST*2120, THST*3240, THST*3430, THST*3460, THST*3480, THST*3700)
Equate(s): DRMA*3410
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3420 Special Studies in Production II F,W (2-3) [0.50]
A continuation of THST*3410. Students will normally work in different capacities in THST*3410 and THST*3420. Admission is by application to the School.
Offering(s): Last offering - Winter 2017
Prerequisite(s): THST*3410
Equate(s): DRMA*3420
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3430 Theatrical Design: Sets & Props F (2-3) [0.50]
This course provides a study of the history, theory, and practice of theatrical design, with focus on the principles of set and prop design.
Offering(s): Offered in even-numbered years. Last offering - Fall 2016
Prerequisite(s): DRMA*2220 or (THST*2230, THST*2240)
Equate(s): DRMA*3430
Department(s): School of English and Theatre Studies

THST*3460 Costume W (2-3) [0.50]
This course studies the art of costume design for the theatre, placing the discipline in historical and theoretical contexts while exploring the practice and art of costume design. The course covers the techniques, materials and language necessary to the costume designer's craft and role in the production of a work of theatre. At the instructor's discretion, the course may include the design of mask, makeup, wigs and accessories.
Offering(s): Offered in odd-numbered years. Last offering - Winter 2017
Prerequisite(s): THST*2230, THST*2240
Restriction(s): DRMA*3440
Department(s): School of English and Theatre Studies

THST*3480 Lighting, Sound, Theatre Media F (2-3) [0.50]
The course studies theatrical lighting, sound, and media from the perspective of the designer. Through a combination of class instruction, demonstration and practical lab projects, the student will follow the process for the design of light, sound and media (theory and practice), from the first reading of a script through all of the stages that lead to the creation of a design. Special attention is given to analyzing scripts for visual and aural imagery.
Offering(s): Offered in odd-numbered years. Last offering - Fall 2016
Prerequisite(s): THST*2230, THST*2240
Restriction(s): DRMA*3440
Department(s): School of English and Theatre Studies

THST*3500 Performance Praxis I W (3-2) [0.50]
Students will collaborate in the exploration of theory and creative practice in a project-based course. The projects may be theatrical or media-based, or an integration of both depending on the iteration of the course. Please consult the Theatre Studies website for more information.
Offering(s): First offering - Winter 2018
Prerequisite(s): THST*2050, THST*2270
Restriction(s): THST*3430, THST*3460, THST*3480, THST*3550, THST*3700
Department(s): School of English and Theatre Studies

THST*3530 Canadian Film F (2-3) [0.50]
This course is designed to give the student knowledge and understanding of Canadian film and film makers.
Offering(s): Offered in even-numbered years.
Prerequisite(s): THST*1200 or DRMA*1500
Equate(s): DRMA*3530
Department(s): School of English and Theatre Studies

THST*3550 Theories of Drama and Theatre W (3-0) [0.50]
This course covers selected theoretical approaches to the study of drama and theatre.
Offering(s): Last offering - Winter 2017
Prerequisite(s): THST*2010, (1 or THST*2080, THST*2120, THST*2240)
Equate(s): DRMA*3550
Department(s): School of English and Theatre Studies

THST*3600 Directed Readings U (3-0) [0.50]
This course provides Independent study opportunities based upon bibliographies established in consultation with the instructor. An essay will normally constitute the written requirement for the course. Tutoring and/or consultation will be arranged, depending on the topic or materials for study. Projects for this course are subject to the approval of the School, and must be submitted to the Director, on forms provided by the School, no later than the last day of classes in the semester prior to enrolment in the course.
Prerequisite(s): 3.00 credits in Theatre Studies including [(THST*2010, THST*2230) or (THST*3140, THST*2190), (1 of THST*2050, THST*2080, THST*2120, THST*2240)]
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3630 Special Studies in Studio Practice U (3-0) [0.50]
The course provides an intensive exploration of one aspect of studio practice: playwriting, acting, design or technical theatre.
Prerequisite(s): 3.00 credits in Theatre Studies including one of the following, as appropriate to the topic of the course: THST*2080, THST*2120, THST*2230, THST*2240.
Equate(s): DRMA*3630
Restriction(s): Instructor consent required.
Department(s): School of English and Theatre Studies

THST*3650 Theatre Historical Studies Seminar F (3-0) [0.50]
This seminar course investigates a topic in theatre history. The course will further develop students' research skills and expertise in writing and speaking about scholarly materials in the discipline. Variable content course.
Offering(s): Last offering - Fall 2016
Prerequisite(s): THST*2010
Equate(s): DRMA*3650
Department(s): School of English and Theatre Studies
THST*3660 Dramatic Literature and Theory Seminar W (3-0) [0.50]
This seminar course investigates an area of dramatic literature. The course will develop students' research skills and writing and speaking about scholarly materials in the discipline. Variable course content.
Offering(s): Last offering - Winter 2017
Prerequisite(s): THST*2010 or DRMA*2300
Department(s): School of English and Theatre Studies

THST*3700 Fundamentals of Directing W (2-3) [0.50]
This course is a study of the basic theories of directing, complemented by practical in-class directing exercises.
Offering(s): Last offering - Winter 2017
Prerequisite(s): (DRMA*1050 or THST*2120), THST*2080
Equate(s): DRMA*3700
Department(s): School of English and Theatre Studies

THST*3850 Canadian Drama and Theatre F (3-0) [0.50]
This course is a study of Canadian plays in their historical, cultural, and theatrical contexts.
Offering(s): Last offering - Winter 2017
Prerequisite(s): (DRMA*2300 or THST*2010) or 1.00 credits in English.
Equate(s): DRMA*3850
Restriction(s): DRMA*3331/2
Department(s): School of English and Theatre Studies

THST*3950 Drama in London U (2-4) [0.50]
A course designed for students taking the London Semester consisting of a study of theatre events in London, through attending performances, reading texts and meeting for weekly seminars.
Equate(s): DRMA*3950
Restriction(s): Permission of the Co-ordinator of the London Semester.
Department(s): School of English and Theatre Studies

THST*4240 Theatrical Organization and Culture F (3-0) [0.50]
This course studies various models of theatrical organization such as social context, theatrical funding, board and management structures, and artistic mandates together with their implications for theatrical production and interpretation.
Prerequisite(s): 10.00 credits including 1.00 credits in Theatre Studies.
Restriction(s): THST*1150, THST*3240
Department(s): School of English and Theatre Studies

THST*4270 Research Seminar I F (3-0) [0.50]
This course is a research seminar in selected topics in media, theatre and performance. The course features variable content. Please consult the Theatre Studies website for more information.
Prerequisite(s): 10.00 credits, including THST*2270
Restriction(s): THST*4320, Restricted to students in a Theatre Studies specialization, with an average of 70% in the specialization.
Department(s): School of English and Theatre Studies

THST*4280 Ensemble Project W (6-9) [1.00]
Students will engage throughout the semester with the processes of forming a theatre company, theorizing its organizational structure, exploring fundraising and publicity exercises, casting, designing, dramaturging, directing, and mounting a production, and engaging in post-production analysis that assesses the social and theatrical impact of the decisions taken and procedures employed.
Prerequisite(s): (THST*2010, THST*2230, (2 of THST*2080, THST*2120, THST*2240), THST*3550, THST*3850, (THST*3650 or THST*3660)) or (THST*2190, THST*2120, THST*3140, THST*3170, THST*3500)
Restriction(s): Restricted to majors in Theatre Studies who have completed a minimum of 14.00 credits with 70% cumulative average in Theatre Studies.
Department(s): School of English and Theatre Studies

THST*4290 Research Seminar II W (3-0) [0.50]
This is an advanced research seminar in selected topics in media, theatre and performance. The course features variable content. Please consult the Theatre Studies website for more information.
Prerequisite(s): 10.00 credits, including THST*4270
Restriction(s): THST*4330, Restricted to students in a Theatre Studies specialization with an average of 70% in the specialization.
Department(s): School of English and Theatre Studies

THST*4320 Seminar in Dramatic Literature and Theory F (3-0) [0.50]
An in depth study of one aspect of dramatic literature written before 1900.
Offering(s): Last offering - Fall 2016
Prerequisite(s): (THST*3650 or THST*3660), THST*3850
Equate(s): DRMA*4320
Department(s): School of English and Theatre Studies

THST*4330 Seminar in Canadian Drama and Theatre W (3-0) [0.50]
An in depth study of one aspect of Canadian drama and theatre.
Offering(s): Last offering - Winter 2017
Prerequisite(s): (THST*3650 or THST*3660), THST*3550, THST*3850
Equate(s): DRMA*4330
Department(s): School of English and Theatre Studies

THST*4340 Playwriting F (3-0) [0.50]
This course is a study of the theory and practice of playwriting.
Offering(s): Last offering - Fall 2016
Prerequisite(s): (THST*3650 or THST*3660), THST*3850
Equate(s): DRMA*4340
Department(s): School of English and Theatre Studies

THST*4500 Performance Praxis II W (3-2) [1.00]
This course provides students with applied leadership roles in capacities such as stage managers, assistant directors, assistant designers or dramaturges and leads to a culminating public production. Students will also study the functions of these roles in production and performance. Admission is by application to the School. Refer to the Theatre Studies website for more information.
Prerequisite(s): THST*3500
Restriction(s): THST*3410, THST*3420, THST*4250 Restricted to students in a Theatre Studies major or minor. Instructor consent required.
Department(s): School of English and Theatre Studies

THST*4650 Honours Essay U (3-0) [0.50]
The completion, under direction, of a scholarly essay in the study of drama and/or theatre. Admission is by application to the instructor.
Prerequisite(s): [(THST*3650 or THST*3660), THST*3550, THST*3850] or (THST*3170 or THST*4270)
Restriction(s): Instructor consent required. 70% cumulative average in Theatre Studies courses.
Department(s): School of English and Theatre Studies
Toxicology

This course will establish the scientific principles underlying the toxic actions of various substances and will introduce the various challenges within the field of toxicology. The chemical nature of injurious substances, their uptake and metabolism by non-target organisms, and their mode of toxic action will be studied in addition to the methods used in safety evaluations and risk assessment.

Prerequisite(s): CHEM*1050, (1 of IPS*1500, MATH*1080, MATH*1200), (1 of BIOL*1040, BIOL*1070, BIOL*1080, BIOL*1090)

Department(s): Department of Chemistry

TOX*4900 Toxicology Research Project I S,F,W (0-9) [1.00]

This research project in toxicology is designed to provide senior undergraduate students with an opportunity to conduct research in an area of toxicology. Students should note that most projects are of two semesters' duration, and should plan their studies with the expectation that they will also register in TOX*4910 in a subsequent semester. Students must make arrangements with both the faculty supervisor and the course coordinator at least one semester in advance. The project supervisor should normally be a faculty member from the Toxicology Program.

Prerequisite(s): TOX*3300

Restriction(s): Normally a minimum cumulative average of 70% is required. Instructor consent required.

Department(s): Department of Chemistry

TOX*4910 Toxicology Research Project II S,F,W (0-9) [1.00]

This course involves a research project in toxicology. Students must make arrangements with both the faculty supervisor and the course coordinator at least one semester in advance. The project supervisor should normally be a faculty member from the Toxicology Program.

Prerequisite(s): TOX*4900

Restriction(s): Normally a minimum cumulative average of 70% is required. Instructor consent required.

Department(s): Department of Chemistry
**Veterinary Medicine**

Department of Biomedical Sciences  
Department of Clinical Studies  
Department of Pathobiology  
Department of Population Medicine  

**The hours in courses below indicate the approximate equivalent number of semester course hours.**

**These courses will be available only to students registered in the D.V.M. program.**

**VETM*3070 Veterinary Anatomy P1 (2-6) [2.00]**

An introduction to comparative, topographical anatomy, primarily of 4 domestic mammals: cat, dog, horse and cow. Full dissections of these species are related to the living animal and to imaging, to form the basis for future studies in clinical morphology. Students are first introduced to the major anatomical systems and then to the regions in detail: thorax, abdomen, pelvis and perineum, limbs, and head and neck. Active learning, problem solving, communication skills and the integration of material across concurrent courses are fostered.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Biomedical Sciences

**VETM*3080 Veterinary Physiology and Biochemistry P1 (3-3) [2.00]**

The course describes the physiological processes carried out by the major tissues and organ systems, and the regulatory mechanisms that affect tissue and organ function. Topics dealt with in the course include the following: the cellular and chemical constituents of blood, blood coagulation and haemostasis, the function of the immune system, resistance to infectious agents and the principles of immunoprophylaxis, cardiac function, cardiovascular haemodynamics, blood pressure, peripheral and regional circulation of blood, the lymph circulation, the structure and function of the mammalian nervous system and organs associated with special senses, the functions of the digestive tract, lungs and kidney thermoregulation and water, electrolyte and acid-base balance. The homestatic features and species variation of the tissue organ systems will be emphasized.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Biomedical Sciences, Department of Pathobiology

**VETM*3120 Veterinary Histology and General Pathology P1 (3-3) [0.75]**

A lecture and laboratory course emphasizing the gross and microscopic organization of the tissues and organs of domestic animals in various physiological states. A comparative approach is used to highlight normal and abnormal gross anatomy and histology to understand how disease affects gross and microanatomical organ structure and function. The lecture and laboratory components are well integrated to provide students with an excellent hands-on experience in histology and pathology.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Biomedical Sciences, Department of Pathobiology

**VETM*3210 Art of Veterinary Medicine I P1 (V-V) [0.50]**

In a series of integrated modules, this course will assist students in increasing their self-awareness and comprehension of a range of legal, professional and ethical values and behaviours that are essential and normal components of veterinary medicine. Emphasis will be placed on understanding, evaluating and improving interpersonal relations and oral and written communication skills. The ethical principles that underlie veterinary medicine will be explored in depth. The course will also assist students in understanding their position in the developing history of veterinary medicine and inform them of emerging trends. Issues related to professional development, how other species interact with humans, and the client/patient/veterinarian triad will be introduced. The application of these learned skills in the resolution of problems will be introduced.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Dean's Office, Ontario Veterinary College, Department of Population Medicine, Veterinary Teaching Hospital

**VETM*3220 Art of Veterinary Medicine II P2 (2-0) [0.50]**

Using modules, this course will build on, and enhance, the knowledge base and skill set acquired in Phase 1 in the area of communications, human-animal interactions, professional development, and the client/patient/veterinarian triad. The focus in these areas will now move towards recognising difficulties that may arise and how to differentiate abnormal situations from normal ones. Problem-solving, conflict resolution and stress management through application of innate and acquired knowledge and skills will be developed. In addition, the course will introduce concepts of business and entrepreneurial skills which are required for successful veterinary practice.

**Prerequisite(s):** VETM*3210  
**Co-requisite(s):** All Phase 2 courses.  
**Department(s):** Dean's Office, Ontario Veterinary College, Department of Population Medicine, Veterinary Teaching Hospital

**VETM*3390 Developmental Biology P1 (1-1) [0.50]**

This course introduces key concepts of veterinary embryology, genomics, and regenerative medicine. A comparative and application-based approach is taken when presenting the course material. The focus is to present issues relevant to veterinary medicine and to apply principles and theories to veterinary practice.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Biomedical Sciences

**VETM*3400 Health Management I P1 (3-1) [0.75]**

The course is the first of two comprehensive and integrated courses that will span the first two phases of the DVM program. Both courses are intended to establish the foundation for, and contribute to the students’ achievement of selected DVM 2000 elements of competency in the context of the principles of health management. The primary emphasis of this component is to establish the historical perspective and basic tools required for health promotion and disease prevention.

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Population Medicine

**VETM*3410 Health Management II P2 (3-0) [0.75]**

This course is a continuation of the Phase 1 course Health Management I. Previously presented concepts will be explored in greater depth and complexity. Additional emphasis will be placed on relevant epidemiological tools for monitoring, outbreak investigation, critical appraisal and the applications of principles from the previous course in the series to measure performance, including relevant production genetics, and animal behaviours in a species/industry context.

**Prerequisite(s):** All Phase 1 courses.  
**Co-requisite(s):** All Phase 2 courses.  
**Department(s):** Department of Population Medicine

**VETM*3430 Clinical Medicine I P1 (V-V) [0.25]**

The course will contribute to students’ achievement of selected DVM 2000 elements of competency in the areas of animal handling and the clinical examination of various species. Students will become familiar with the expected variation in common clinical parameters and how this variation is impacted by aging, changes in health status, and external environmental influences and other sources of stress. Students will be introduced to clinical problem solving using case material from the Veterinary Teaching Hospital. They will develop their verbal and written communication skills through case simulations and analyses. The course will be presented using lectures, laboratory classes and independent study. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Co-requisite(s):** All Phase 1 courses.  
**Department(s):** Department of Clinical Studies

**VETM*3440 Clinical Medicine II P2 (0-2) [0.50]**

The course is a continuation of Clinical Medicine I. It will contribute to students’ achievement of selected elements of graduating competency in the areas of clinical examination of specific organ systems of various species. Students will enhance and refine their clinical problem solving skills using case material from the Veterinary Teaching Hospital. They will continue to develop their verbal and written communication skills through case simulations and analyses. The course will be presented using lectures, laboratory classes and independent study. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Co-requisite(s):** All Phase 1 courses.  
**Co-requisite(s):** All Phase 2 courses.  
**Department(s):** Department of Clinical Studies

**VETM*3450 Principles of Disease in Veterinary Medicine P2 (V-V) [2.75]**

This course addresses several major topics, including principles of disease induction and transmission, host response to threat and injury, pathogenic mechanisms of infectious and toxic agents, and manipulation of disturbances in health. The interaction among host, environmental, and etiologic factors in the development of disease will be highlighted. Students will learn to recognize, describe, and evaluate disturbances of health and homeostasis at the level of the population, individual animal, organ system, tissue and cell using a variety of diagnostic modalities.

**Prerequisite(s):** All Phase 1 courses.  
**Co-requisite(s):** All Phase 2 courses.  
**Department(s):** Department of Biomedical Sciences, Department of Pathobiology
XII. Course Descriptions, Veterinary Medicine

**VETM*3460 Theriogenology P2 (V-V) [0.75]**

A lecture and laboratory course covering the normal and abnormal reproductive systems of domestic animals. The course will include mammalian reproductive physiology and histology, diagnosis and treatment of reproductive disorders, including infertility, and management of breeding programs of the common domestic species. An introduction to the new reproductive technologies used in theriogenology will also be provided.

**Prerequisite(s):** All Phase 1 courses.

**Co-requisite(s):** All Phase 2 courses.

**Department(s):** Department of Biomedical Sciences, Department of Population Medicine

**VETM*3470 Anaesthesiology and Pharmacology P2 (V-V) [0.75]**

This course provides the general principles, pharmacologic basis, and practical applications of general and local anaesthesia in small and large animals. Other topics covered include fluid and acid-base imbalance and the prevention and treatment of surgical shock.

**Prerequisite(s):** All Phase 1 courses.

**Co-requisite(s):** All Phase 2 courses.

**Department(s):** Department of Biomedical Sciences, Department of Clinical Studies

**VETM*3510 Principles of Surgery P2 (2-0) [0.25]**

The principles of surgery in various animal species are given. The lecture topics include patient and surgeon preparation, tissue handling instrumentation, suturing and surgical principles and approaches to various organ systems and anatomical regions.

**Prerequisite(s):** All Phase 1 courses.

**Co-requisite(s):** All Phase 2 courses.

**Department(s):** Department of Clinical Studies

**VETM*4220 Art of Veterinary Medicine III P3 (3-0) [0.50]**

This modular course will require students to apply the knowledge and skills acquired in Phases 1 and 2 to problems that incorporate aspects of one or more of the following areas: communications and conflict resolution, ethics, professional behaviour, human-animal interactions, analysis and planning, and business issues. This course will focus on methods to resolve difficulties in the above areas that are interfering with intrapersonal and interpersonal relationships and with how to return abnormal situations to normal ones. Problem-solving, conflict resolution and stress management through application of innate and acquired knowledge and skills will be expected. The course will be taught primarily through case analysis.

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Dean's Office, Ontario Veterinary College, Department of Population Medicine, Veterinary Teaching Hospital

**VETM*4420 Clinical Pharmacology P3 (V-V) [0.25]**

This course stresses rational drug therapy through an understanding of drug factors, host factors and disease factors, with emphasis on clinically relevant properties of selected major drug classes and used for therapy (prevention and treatment) in small animals, food animals, and horses.

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Restriction(s):** Registration in the D.V.M. Program

**Department(s):** Department of Biomedical Sciences

**VETM*4450 Equine Medicine and Surgery P3 (3-0) [0.50]**

The course will contribute to students' achievement of selected DVM 2000 elements of competency in the context of the horse. The primary emphasis is directed towards developing the skills, knowledge and attitudes that will permit the entry-level veterinarian to develop strategies to deal with common and uncommon diagnoses.

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Clinical Studies

**VETM*4460 Food Animal Medicine and Surgery P3 (V-V) [1.00]**

The course will contribute to students' achievement of selected DVM 2000 elements of competency in the context of the common ruminant species and swine. The primary emphasis is directed towards developing the skills, knowledge and attitudes that will permit the entry-level veterinarian to develop strategies to deal with common and uncommon diagnoses. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Clinical Studies, Department of Population Medicine

**VETM*4470 Medicine and Surgery of Dog and Cat P3 (V-V) [1.00]**

The course will contribute to students' achievement of selected DVM 2000 elements of competency in the context of the dog and cat. The primary emphasis is directed towards developing the skills, knowledge and attitudes that will permit the entry-level veterinarian to develop strategies to deal with common and uncommon diagnoses. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Clinical Studies

**VETM*4480 Comparative Medicine P3 (V-V) [0.75]**

The course will contribute to students' achievement of selected elements of graduating competency in the context of species of their choice. The primary emphasis is directed towards developing the skills, knowledge and attitudes that will permit the entry-level veterinarian to assess and advise on animal production and performance and evaluate the necessity for, and implementation of, health management programs. The course is constructed of a series of species-based modules. Students will be required to take two of the modules. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Pathobiology

**VETM*4490 Systems Pathology P3 (V-V) [1.00]**

The course will contribute to students' achievement of greater depth in selected elements of graduating competency in the context of health management in species of their choice. The primary emphasis is directed towards developing species-specific skills, knowledge and attitudes that will permit the entry-level veterinarian to carry out the post-mortem examinations, select and perform relevant ancillary diagnostic tests and procedures, interpret findings, and initiate and interpret results of further investigations. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Pathobiology

**VETM*4530 Health Management III P3 (V-V) [0.50]**

The course will contribute to students' achievement of greater depth in selected elements of graduating competency in the context of health management in species of their choice. The primary emphasis is directed towards developing species-specific skills, knowledge and attitudes that will permit the entry-level veterinarian to assess and advise on animal production and performance and evaluate the necessity for, and implementation of, health management programs. The course is constructed of a series of species-based modules. Students will be required to take two of the modules. The graduating competencies can be found on the OVC website (http://www.ovcnet.uoguelph.ca/homepage/html).

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Department(s):** Department of Population Medicine

**VETM*4540 Surgical Exercises P3 (V-V) [1.75]**

Veterinary students receive training in preoperative planning, anaesthesia and surgical techniques, operative room decision making and post-operative care in this laboratory course. Students begin by practicing technical skills on inanimate models. They progress to performing a series of supervised operations designed to parallel the most commonly performed surgeries in private practice. A once weekly rounds period allows discussion of issues arising from the previous anaesthesia and surgery, and planning for the upcoming laboratory. Though some didactic material is presented, the course is mainly experiential. The evaluation outcome of the course is outstanding, pass or fail.

**Prerequisite(s):** All Phase 2 courses.

**Co-requisite(s):** All Phase 3 courses.

**Restriction(s):** Registration in the D.V.M. Program

**Department(s):** Department of Clinical Studies

**VETM*4610 Small Animal Clinics - Small Animal Stream P4 (V-V) [3.25]**

This course is for students who have selected the Small Animal Stream in Phase 4 or DVM Program. The goal of the small animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will rotate through various service areas, and actively participate in the diagnosis and treatment of client-owned animals in the teaching hospital. Regularly scheduled small group discussions allow the exploration of issues during diagnosis and management of the individual cases.

**Prerequisite(s):** All Phase 3 courses.

**Co-requisite(s):** VETM*4620, VETM*4880, VETM*4900

**Restriction(s):** Registration in the DVM program.

**Department(s):** Dean's Office, Ontario Veterinary College

Last Revision: March 4, 2016

2016-2017 Undergraduate Calendar


VETM*4620 Health Management - Small Animal Stream P4 (V-V) [1.00]
This course is for students who have selected the Small Animal Stream in Phase 4 or DVM Program. The goal of the health management course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4610, VETM*4880, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4660 Small Animal Clinics - Mixed Stream P4 (V-V) [2.00]
This course is for students who have selected the Mixed Stream in Phase 4 or DVM Program. The goal of the small animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4670, VETM*4680, VETM*4890, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4670 Large Animal Clinics - Mixed Stream P4 (V-V) [1.50]
This course is for students who have selected the Mixed Stream in Phase 4 or DVM Program. The goal of the large animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4660, VETM*4680, VETM*4890, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4680 Health Management - Mixed Stream P4 (V-V) [2.00]
This course is for students who have selected the Mixed Stream in Phase 4 of the DVM Program. The goal of the health management course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4660, VETM*4670, VETM*4890, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4710 Large Animal Clinics - Food Animal Stream P4 (V-V) [1.00]
This course is for students who have selected the Food Animal Stream in Phase 4 of the DVM Program. The goal of the large animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will rotate through various service areas, and actively participate in the diagnosis and treatment of client-owned animals in the teaching hospital. Regularly scheduled small group discussions allow the exploration of issues during diagnosis and management of the individual cases.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4660, VETM*4670, VETM*4890, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4720 Health Management - Food Animal Stream P4 (V-V) [3.25]
This course is for students who have selected the Food Animal Stream in Phase 4 of the DVM Program. The goal of the health management course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4710, VETM*4880, VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4870 Clinical Medicine III P3 (0-2) [0.25]
This course will contribute to students' achievement of selected DVM 2000 elements of competency in the context of the hospital environment. This is an integrated course in which students will enhance a variety of clinical skills, including physical examination, history taking, problem solving, and ancillary diagnostic tests and procedures. This course is primarily carried out in the Veterinary Teaching Hospital where students will be exposed to case material from the Large and Small Animal Clinics. The emphasis is directed towards enhancing the skills, knowledge and attitudes that will permit the student to maximize the benefit to be derived from senior year courses.

Prerequisite(s): All Phase 2 courses.
Co-requisite(s): All Phase 3 courses.
Department(s): Department of Clinical Studies

VETM*4880 Electives in Veterinary Medicine I P4 (V-V) [3.25]
This course is for students who have selected the Small Animal or Food Animal Stream in Phase 4 of the DVM Program. The goal of this course is to provide students the opportunity to pursue greater breadth and depth in their program according to their interests. The course is largely experiential in structure and process. Students will select a series of approved internal and external rotations that will allow them to pursue areas of interest in veterinary medicine.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): (VETM*4610 or VETM*4710), (VETM*4620 or VETM*4720), VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4890 Electives in Veterinary Medicine II P4 (V-V) [2.00]
This course is for students who have selected the Mixed or Equine Stream in Phase 4 of the DVM Program. The goal of this course is to provide students the opportunity to pursue greater breadth and depth in their program according to their interests. The course is largely experiential in structure and process. Students will select a series of approved internal and external rotations that will allow them to pursue areas of interest in veterinary medicine.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): (VETM*4660 or VETM*4920), (VETM*4670 or VETM*4930), (VETM*4680 or VETM*4940) VETM*4900
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4900 Veterinary Externship P4 (0-0) [2.50]
This is an eight-week experiential learning opportunity that junior students in the DVM Program must organize by the mid-way through Phase 3. The externship must be in approved private, primary care, veterinary practice. Senior students in the DVM Program, under the supervision of a designated host veterinarian, will experience being part of a team providing health care services to the public. This course will provide students with the opportunity to integrate and apply their knowledge and experience from previous courses, and further refine their problem-solving and communication skills, and enhance their ability to work as part of a team. The evaluation outcome of this course is outstanding, pass or fail.

Prerequisite(s): All Phase 1, Phase 2 and Phase 3 courses.
Department(s): Department of Clinical Studies

VETM*4920 Small Animal Clinics - Equine Stream P4 (V-V) [1.50]
This course is for students who have selected the Equine Stream in Phase 4 of DVM Program. The goal of the small animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will rotate through various service areas, and actively participate in the diagnosis and treatment of client-owned animals in the teaching hospital. Regularly scheduled small group discussions allow the exploration of issues during diagnosis and management of the individual cases.

Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4890, VETM*4900, VETM*4930, VETM*4940
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

Last Revision: March 4, 2016
VETM*4930 Large Animal Clinics - Equine Stream P4 (V-V) [2.50]
This course is for students who have selected the Equine Stream in Phase 4 of the DVM Program. The goal of the large animal clinics course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will rotate through various service areas, and actively participate in the diagnosis and treatment of client-owned animals in the teaching hospital. Regularly scheduled small group discussions allow the exploration of issues during diagnosis and management of the individual cases.
Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4890, VETM*4900, VETM*4920, VETM*4940
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College

VETM*4940 Health Management - Equine Stream P4 (V-V) [1.50]
This course is for students who have selected the Equine Stream in Phase 4 of the DVM Program. The goal of the health management course is to assist in the role transformation from veterinary student to veterinary practitioner. The course is largely experiential in structure and process. Small groups of students will participate in a series of rotations that emphasize the implementation of veterinary directed management programs, which affect the health of animals and ultimately humans.
Prerequisite(s): All Phase 3 courses.
Co-requisite(s): VETM*4670, VETM*4890, VETM*4900, VETM*4920
Restriction(s): Registration in the DVM program.
Department(s): Dean's Office, Ontario Veterinary College
### WMST*1000 Introduction to Women's Studies F (3-0) [0.50]

An introduction to the methods and analyses of Women's Studies. An interdisciplinary feminist and multicultural examination of research about women and the gendered nature of societies and cultures. Areas of inquiry may include psychology, law, science, culture, work, family, violence, health, and sexuality.

**Equate(s):** ISS*2200, WMST*2200  
**Department(s):** Dean's Office, College of Arts

### WMST*2000 Women and Representation W (3-0) [0.50]

An interdisciplinary analysis of the role gender plays in representation, drawing on areas such as television, film, music, literature, visual arts, ethnography, medicine and law. International and cross-cultural perspectives included.

**Department(s):** Dean's Office, College of Arts
ZOO*2090 Vertebrate Structure and Function F (2-3) [0.50]
This course offers a comparative survey of the structure and functioning of the chordates with emphasis on the vertebrates and includes a laboratory study of the anatomy of selected vertebrates.
Prerequisite(s): 4.00 credits including BIOL*1070
Department(s): Department of Integrative Biology

ZOO*2700 Invertebrate Morphology & Evolution W (3-3) [0.50]
This course examines the vast diversity of invertebrate taxa and the tools and concepts used to classify them and understand their origins. Principles of zoogeography, phylogeny, natural selection and comparative analyses will form the conceptual backbone of the course. In lectures and labs, students will 'climb' the tree of life, from the most ancient pre-invertebrates to more derived forms, and explore their anatomical and morphological diversity.
Prerequisite(s): 4.00 credits including BIOL*1070
Department(s): Department of Integrative Biology

ZOO*3000 Comparative Histology F (3-3) [0.50]
This course provides an introduction to the microscopic structure of the major organ systems of the vertebrate body. Beginning with an examination of epithelial, connective, muscular, and nervous tissues, the course then examines the comparative histology of the circulatory, nervous, digestive, integumentary, respiratory, excretory, reproductive, endocrine, and sensory systems of vertebrates.
Prerequisite(s): ZOO*2090
Department(s): Department of Integrative Biology

ZOO*3050 Developmental Biology W (3-3) [0.50]
This course will focus on the development of vertebrates and invertebrates from fertilized egg to adult. It will examine fertilization, cell differentiation into tissues and organs, regulation of cell growth, and transmission of developmental information to the next generation. Throughout, the course will emphasize the evolutionary mechanisms that have shaped developmental patterns in animals.
Prerequisite(s): MBG*2040, BIOL*2400 is strongly recommended.
Restriction(s): ZOO*2100
Department(s): Department of Integrative Biology

ZOO*3600 Comparative Animal Physiology I F (3-0) [0.50]
This course will examine the physiological processes that enable animals to live within a diverse range of environments. Lectures will focus on the underlying molecular and cellular events that mediate physiological processes and contribute to whole animal homeostasis, and emphasize strategies and adaptations used by different animals when influenced by various environmental conditions. Fundamental mechanisms in animal physiology such as diffusion, osmosis, feedback systems, and homeostasis will be explored in nervous, muscular, endocrine and sensory systems of vertebrates.
Prerequisite(s): ZOO*3610
Department(s): Department of Integrative Biology

ZOO*3610 Comparative Animal Physiology II W (3-0) [0.50]
This course will examine the physiological processes that enable animals to live within a diverse range of environments. With a focus on respiratory, cardiovascular, osmoregulatory and digestive physiological processes, the lectures will examine the underlying molecular and cellular events that mediate physiological processes and contribute to whole animal homeostasis. An associated lab course (ZOO*3630) is available.
Prerequisite(s): ZOO*3600, (STAT*2040 or STAT*2230 is recommended)
Restriction(s): ZOO*3210
Department(s): Department of Integrative Biology

ZOO*3630 Lab Studies in Animal Physiology II W (0-3) [0.25]
In this hands-on laboratory course, students will apply skills and techniques to conduct experiments on living animals with the goal of characterizing physiological processes. Students will advance their writing skills through preparation of several full lab reports. The last experiment in the course is a self-directed study where students will develop hypotheses, generate and test predictions and design the experiment using tools they have learned in the course.
Prerequisite(s): ZOO*3610
Co-requisite(s): ZOO*3620
Restriction(s): ZOO*3210
Department(s): Department of Integrative Biology

ZOO*3700 Integrative Biology of Invertebrates F (3-3) [0.50]
This course explores variation in physiology, reproduction and life history among invertebrates, and the role of invertebrates in marine, freshwater and terrestrial ecosystems. Through field experiences, lab study and a class experiment, we will examine the diverse solutions that invertebrates have evolved to live in very different environments, including: circulation and gas exchange; feeding and digestion; osmoregulation and excretion, nervous system and sensory structures; locomotion and biomechanics, and invertebrate communities.
Prerequisite(s): ZOO*2700
Department(s): Department of Integrative Biology

ZOO*4070 Animal Behaviour F (3-0) [0.50]
This course provides an introduction to the theories and principles of the behaviour of animals. It includes comparative studies of learning, socialization, social interaction, and other components of animal behaviour.
Prerequisite(s): (BIOL*2400 or BIOL*3400) , (STAT*2040 or STAT*2230)
Department(s): Department of Integrative Biology

ZOO*4170 Experimental Comparative Animal Physiology W (3-3) [0.50]
In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be stressed. The focus of the course will be on laboratory exercises.
Prerequisite(s): 1 of BIOM*3200, HK*2810, HK*3940 , ZOO*3200 , ZOO*3210 , ZOO*3600
Restriction(s): ZOO*3600
Department(s): Department of Integrative Biology

ZOO*4300 Marine Biology and Oceanography F (3-3) [0.75]
This intensive two-week course is held in late August or early September before classes commence for the Fall semester. The course is held at the Huntsman Marine Science Centre, St. Andrews, New Brunswick. The ecology, behaviour, physiology, biochemistry, biomechanics of marine plants and animals will be studied as well as basic oceanographic techniques. Students will be able to familiarize themselves with the techniques and equipment involved in various branches of marine biology and oceanography. In addition to regular tuition fees, students are responsible for the cost of transportation to St. Andrews, and for charges levied by the Huntsman Marine Science Centre for room and board. These fees are paid to Student Finance and Awards of the University of Guelph. A department application form must be submitted for approval before course selection. The signature of the course coordinator is required to select the course. This course must be recorded as part of your Fall course selection and tuition and compulsory fees will be calculated accordingly. Students taking this course DO NOT use course numbers reserved for Ontario Universities Program in Field Biology.
Prerequisite(s): BIOL*3450, ZOO*2700
Department(s): Department of Integrative Biology

ZOO*4330 Biology of Fishes W (2-3) [0.50]
This course provides a comparative examination of selected freshwater and marine fishes to illustrate the influence of aquatic environments on life styles, behavioral patterns, physiological responses, population biology and community structure. The use of niche, habitat and ecotope concepts in defining the role of fishes in representative types of aquatic ecosystems will be examined.
Prerequisite(s): 15.00 credits including (STAT*2040 or STAT*2230), ZOO*2090
Restriction(s): ZOO*2090
Department(s): Department of Integrative Biology

ZOO*4570 Marine Ecological Processes W (3-1) [0.50]
This course provides an advanced analysis of the physical and biogeochemical processes in the world's oceans and the dependence of biological processes on physical and chemical processes from micro- to macro-scales. Topics to be discussed include production and energy transfer within pelagic food webs, export of energy to the benthos, and structure and dynamics of marine communities.
Prerequisite(s): BIOL*2060, BIOL*3450, PHYS*1080
Restriction(s): ZOO*2090
Department(s): Department of Integrative Biology
### ZOO*4910 Integrative Vertebrate Biology F (3-0) [0.50]
This course examines the proximate and historical causes of diversity in morphology, physiology and behaviour among major groups of vertebrates (fishes, amphibians, reptiles, birds, mammals). First, topics such as vertebrate origins, zoogeography, taxonomy and comparative methods will be developed as a foundation for inquiry. The remainder of the course will be organized around specific contemporary problems in vertebrate biology such as the evolution of endothermy; feeding strategies and metabolism; locomotion and migration; trends in vertebrate reproduction; evolution of brain size and complexity in relation to cognition and communication. Each problem will be explored through analyses of taxonomic diversity, historical and phylogenetic constraints, physiological and developmental causes, and functional effects.

**Prerequisite(s):** ZOO*2090, (BIOL*2400 or BIOL*3400)  
**Co-requisite(s):** ZOO*3200 or ZOO*3600  
**Department(s):** Department of Integrative Biology

### ZOO*4920 Lab Studies in Ornithology F (0-3) [0.25]
This course provides a practical experience in the study of Ornithology. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate, through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.

**Prerequisite(s):** 14.00 credits including ZOO*2090  
**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.  
**Department(s):** Department of Integrative Biology

### ZOO*4940 Lab Studies in Herpetology W (0-3) [0.25]
This course provides a practical experience in the study of Herpetology. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate, through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.

**Prerequisite(s):** 15.00 credits including ZOO*2090  
**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.  
**Department(s):** Department of Integrative Biology

### ZOO*4950 Lab Studies in Mammalogy W (0-3) [0.25]
This course provides a practical experience in the study of Mammalogy. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate, through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.

**Prerequisite(s):** 15.00 credits including ZOO*2090  
**Restriction(s):** This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.  
**Department(s):** Department of Integrative Biology